DOST-PCHRD

DEPARTMENT OF SCIENCE AND TECHNOLOGY
PHILIPPINE COUNCIL FOR HEALTH RESEARCH AND DEVELOPMENT

PCHRD
ANNUAL REPORT

Forty years of transforming lives through health research and development

2022

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The lead coordinating body for health research in the Philippines

DEPARTMENT OF SCIENCE AND TECHNOLOGY

Philippine Council for
Health Research and Development

DOST-PCHRD

The Philippine Council for Health Research and Development (PCHRD) is one of the three sectoral councils of the Department of Science and Technology (DOST). It is a forward-looking, partnership-based national body responsible for coordinating and monitoring research activities in the country.

VISION

The PCHRD as the recognized lead provider of research-based solutions and innovations to address health system needs by 2028.

MISSION

As the national coordinating body for health research, we provide central direction, leadership and coordination of health research activities. To achieve this, we are committed to do the following:

- Formulate agenda, plans, policies, and strategies for health research
- Mobilize resources to support health research
- Develop and strengthen capacity for health research
- Support the development of affordable, accessible, and quality S&T-based solutions and innovations
- Ensure the dissemination and utilization of health research outputs
- Monitor and evaluate health research activities
- Establish linkages and partnerships with local and international organizations
- Promote good governance among health research organizations through efficient, effective, transparent, and ethical health research management system.

CORE VALUES

P *assion for excellence and innovation in public service*

C *ulture of teamwork and collaboration*

H *igh regard for work ethics and integrity*

R *esponsive personal effectiveness*

D *ynamic involvement in quality management system*

MESSAGE FROM THE DOST SECRETARY

SEC. RENATO U. SOLIDUM
Secretary
Department of Science and Technology

"Building on your legacy for the past 40 years, I am confident that PCHRD is always one with the DOST in ensuring that the health research community will contribute in the attainment of a resilient, unified, and sustainable Philippines."

For the Philippine Council for Health Research and Development (PCHRD), the year 2022 is a banner year in terms of making the public aware about DOST's initiatives in combating the challenges of the COVID-19 pandemic in the Philippines. During the global outbreak, the general public has seen the importance of research and development (R&D) and its applications in the filed of health-care, and this is another milestone for DOST-PCHD as we celebrate its 40th founding anniversary.

I am exceptionally proud of the significant progress we, collectively, have achieved this year in the areas of research management, capacity building, technology transfer, and research utilization. DOST-PCHRD remains consistently strong in monitoring funded projects and in managing more than 700 million pesos of the Department's funds to support priority health research areas – Addressing and Responding to COVID-19 through Health. Research (ARCHER), Tuklas Lunas, Biomedical Devices, Functional Foods, Diagnostics, Mental Health, Functional Foods, Disaster Risk Reduction and Climate Change Adaptation for Health, Nutrition and Food Safety, and Digital Frontiers Technology for Health.

As one of the implementing arms of the DOST's Balik Scientist Program and S and T Fellowship Program, DOST-PCHRD has shown persistence in tapping into the ingenuity and expertise of Filipino researchers. This strengthens the research and development capabilities of the academe, public and private sectors, and industry.

DOST-PCHRD also continued to meaningfully advance efforts in research utilization. The launching of the HeaRTNovation Program demonstrated the Council's commitment in innovating programs that will assist local researchers in the different stages of technology transfer — conceptualization to commercialization. The well-received conduct of scientific and press conferences, contests, and exhibitions for your stakeholders is also admirable. Likewise, the digital campaign, "Making your Life Better," which made million engagements in the social media platform is something we can explore too as we work towards the realization of our new battle cry #OneDOST4U.

In the coming year, we will witness the beginning of a chapter as we shift the wheel, stirring for the goals of the new administration. Seeing how DOST-PCHRD lived by the mission of providing leadership and direction to the county's health research initiatives gives me confidence that the Council will never lose sight of its purpose and values.

Building on the Council's legacy for the past 40 years, I am confident that DOST-PCHRD is always one with the DOST in ensuring that the health research community will contribute in the attainment of a resilient, unified, and sustainable Philippines.

Salute to the men and women of PCHRD!

Maraming Salamat po.

EXECUTIVE DIRECTOR'S REPORT

To our partners in health and to every Filipino to whom all our efforts are for:

DR. JAIME C. MONTOYA
Executive Director,
Philippine Council for Health Research and Development
Lead Coordinator,
Philippine National Health Research System

Our partners in health and every Filipino to whom all our efforts are for:

It is my pleasure to present to you the 2022 Annual Report of the Department of Science and Technology - Philippine Council for Health Research and Development (DOST-PCHRD).

This year has been very special to the Council, as we marked our 40th founding anniversary. Through a series of activities that ran throughout the year, we celebrated four decades worth of health research initiatives dedicated to making lives better for the Filipino people.

Parallel to this commitment, we continued to expand our support for health R&D – utilizing more than 478 million pesos for research and development projects, 125 million pesos for capacity building activities, and 54 million pesos for S&T services. We were also able to generate and allocate funds for health research with the support of the DOST and our partner institutions both here and abroad.

Building on our previous achievements, we continue to note significant growth from our supported projects across our priority research areas. Expected to emerge as one of our biggest programs in the coming years, our Re-emerging and Emerging Diseases or RED Program received the biggest chunk of combined investment from the DOST and the PCHRD in 2022. The allocation supported the advancement of several projects that cover a diverse range of focal areas in the field, including the commencement of the Inter-Regional Network through One Health Approach to Combat AMR program, the approval and implementation of several studies under the soon-to-be established Virology and Vaccine Institute of the Philippines (VIP), and the continuation of long-running projects such as the Prospective Urban and Rural Epidemiological (PURE) study. With the support of our 29 Tuklas Lunas partners, we also continued our thrust for local drug discovery and development, exploring promising herbal and drug candidates for priority diseases, while simultaneously building our infrastructure capabilities in the field. This year, we saw the completion of the remaining projects for the establishment of the Philippine Biorepository Network (PBN), which we foresee will support further research on medicinal plants and their conservation. In the field of genomics, we stayed true to our commitment of studying the Filipino genome for the development of improved and targeted strategies or technologies in disease diagnosis, management, treatment, and prevention. In 2022, we saw the commencement of several projects for OMIC technologies, such as the study on rare Filipino diseases like X-linked Dystonia Parkinsonism or XDP, and the launch of biosurveillance activities of the Philippine Genome Center (PGC) in Visayas and Mindanao. Similar themes of sustained growth and development can also be seen across all our supported research programs, which you can read more as you browse through this publication.

Likewise, we continue to invest in building the country's capacity against COVID-19 and in assisting our communities transition to the new normal. This year, we allocated more than 85 million pesos for projects related to COVID-19 through our Addressing and Responding to COVID-19 through Health Research or ARCHER Program. This allocation supported a total of 17 projects, 15 of which are already completed.

Recognizing the critical importance of nurturing the growth of our own pool of researchers, we carried out capacity building activities that cover a wide spectrum of health research topics and implemented several scholarship programs. This year alone, we monitored a total of 181 scholars and welcomed 16 new scholars. We are also proud to share that we have six scholars who already graduated this year. from our MD-PhD and MS in Molecular Medicine Programs.

To ensure that health research initiatives will adhere to the highest ethical standards, we worked with the Philippine Health Research Ethics Board (PHREB) for the accreditation of 36 research ethics committees (RECs) and assisted in the conduct of 65 capacity building activities on ethical research. This year, we also launched the 2022 National Ethical Guidelines for Research Involving Human Participants.

By forging strategic alliances abroad, we are also able to expand our support for researchers. Together with Italy, we are currently implementing capacity building programs at the University of Trieste, University of Pisa, and the Fondazione Italiana Fegato (FIF). Our partnership with FIF also enables collaborative work on liver studies between the two countries and will eventually pave the way for the establishment of the Philippine Liver Network. We also have two ongoing projects with Singapore: one with the Singapore Diagnostics Development Hub (DxD) Hub who is our co-chair for the ASEAN Diagnostics Initiative (DxI), and the other with the Agency for Science, Technology, and Research (A*STAR) for the establishment of innovation hubs in the Philippines.

All our initiatives, of course, are meant to be translated into outputs that will benefit our communities. In terms of research utilization, we provided support to 12 research dissemination projects, provided inputs to 22 proposed legislations, and provided support to five projects from Filipino startup companies. This year, we also secured funding for our HeaRTNovation Hubs Program, which will enable us to develop a framework that will guide the establishment of innovation hubs in our partner hospitals and health institutions. We are also proud to share that we have already launched our HeaRTNovation portfolio, which showcases 41 PCHRD-supported technologies that are either ready for adoption, pre-commercialization, or are fully commercialized.

To increase appreciation for health research, we continue to intensify our communication strategies that cater to our diverse audiences and stakeholders. In order to provide a platform for dialogue with the media, we conducted 11 sessions of our Talakayang HeaRTBeat. We also reinforced our efforts across all platforms, especially on Facebook where we now have over 75,000 followers. This year, we also saw the success of our "Making Your Life Better" digital campaign with more than a million engagements, which highlighted the Council's contribution to health research and its impact on improving the lives of the Filipino people.

What I mentioned here are only examples of our work and accomplishments for 2022. With this report, I hope not to only share our progress, but to also reinforce our commitment: to make lives better for the Filipino people through health R&D.

On behalf of the Council, I thank everyone who has been with us for the past 40 years.

40

PCHRD was created on March 17, 1982 through Executive order No. 784. In 1987, Executive Order No. 128 reaffirmed its existence and relevance. This directive reorganized the National Science and Technology Authority into what is now the Department of Science and Technology.

years of making life better for the Filipinos

PCHRD 40 &BEYOND
TRANSFORMING LIVES THROUGH HEALTH RESEARCH AND DEVELOPMENT

A year-long celebration of PCHRD's 40 years

In the past 40 years, the DOST-PCHRD, together with its partners, worked to provide research-based solutions for health. With the theme, "PCHRD @ 40 and Beyond: Transforming Lives through Health Research and Development," a series of activities for the whole year was prepared, which highlights every aspect of its initiatives in health – from supporting R&D, strengthening the capacity of its pool of experts, to bringing research outputs to utilization.

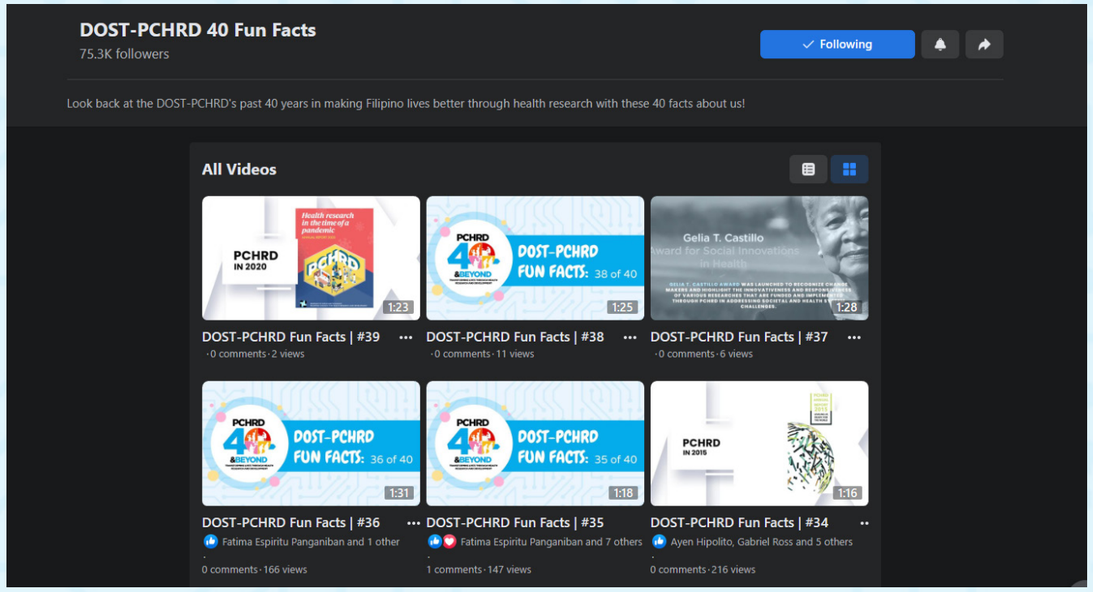
HeaRT for the Filipino: Pananaliksik Pangkalusugan para sa Pilipino

The kick-off event

To commence the beginning of the year-long anniversary celebration, a kick-off event entitled, "HeaRt for the Filipino: Pananaliksik Pangkalusugan para sa Pilipino," was held on 17 January 2022 via Zoom video conference and live simulcast in its DOST-PCHRD Facebook page.

In the event, the Council launched the Visualized Health Research 2.0, a visual abstract contest which aims to translate results of PCHRD projects which are published in scholarly journals into visual abstracts that will be posted in Facebook and Twitter. Intellectual Property and Technology Management (IPTM) Programs and Services were also launched in the event.

40-Day Video Countdown



On 7 February 2022, the first of the 40 videos was released in the DOST-PCHRD Facebook page to mark the 40-day countdown to the anniversary main event. Each video contains significant accomplishments of the Council each year since its inception in 1982 so stakeholders can look back on its important contributions as it reaches its 40th anniversary.

Drawing on Collective Strengths for Pandemic Preparedness: Launch of SARS- CoV-2 Genomic Biosurveillance Services at UP PGC Visayas and Mindanao

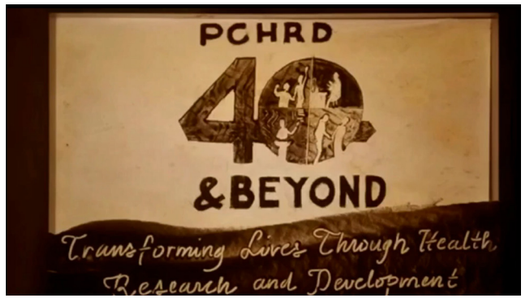
On 11 March 2022, in a virtual event co-hosted by the DOST-PCHRD, the University of the Philippines (UP), through its Philippine Genome Centers (PGCs) in UP Visayas and in UP Mindanao, announced that it is capable of sequencing the genome of SARS-CoV-2 from community samples in both island groups.

The fully-equipped satellite facilities, made possible through the joint efforts of UP, the Department of Science and Technology (DOST), the Department of Health (DOH), and the Department of Budget and Management (DBM), began genome sequencing services of nasopharyngeal or oropharyngeal swab samples from DOH-licensed COVID-19 testing laboratories in cooperation with the DOH - Epidemiology Bureau (DOH-EB), to detect SARS-CoV-2 variants circulating in the Visayas and Mindanao regions.

In the first quarter of the year, UP-PGC Visayas worked with the Western Visayas Medical Center for the collection and viral RNA extraction of samples prior to sequencing. From January-December 2022, the UP-PGC Visayas successfully sequenced a total of 5,128 samples and submitted the results to the DOH-EB for analysis and endorsement to the Regional Epidemiology Surveillance Units (RESUs). The RESUs report supplements the respective local government units (LGUs) strategy to mitigate the transmission of circulating variants in the concerned areas.

Similarly, the UP-PGC Mindanao team worked with the Southern Philippines Medical Center (SPMC) for the sequencing of samples from Mindanao. From January-December 2022,the UP-PGC sequences a total of 1,865 samples.

The national effort for genomic biosurveillance of SARS-CoV-2 is a collaboration among different agencies. Laboratories and other institutions, through a coordinated chain of roles and responsibilities, aim to provide local and national authorities with data and scientific evidence on the circulating SARS-CoV-2 variants in the archipelago.



The Main Celebration

A three-day virtual celebration on 16-18 March 2022 via Zoom and Facebook live streaming was held to celebrate the 40th Anniversary of DOST-PCHRD. The event provided a platform for participants from the

academe, policymakers, private sector, and civil society representatives to converse on advancing the landscape of the country's health research in the next decade.

Day 1: Pre-conference
The first day of the celebration featured the launching of two publications which were products of partnerships - the Tuklas Lunas Book of Accomplishments and the 2022 National Ethical Guidelines for Research Involving Human Participants (NEGRIHP).

The Tuklas Lunas Book of Accomplishments highlights a decade's worth of research and innovation in the field of drug discovery and development. Through the years, the program has partnered with 30 institutions across Luzon, Visayas, and Mindanao on more than 60 research projects, spanning a diverse range of possible herbal formulations and drug leads for priority diseases. The book also aims to promote continuity and serve as a guide for researchers who will further pursue projects in the field.

On the other hand, the 2022 NEGRIHP is an updated version of the 2017 National Ethical Guidelines for Health and Health-Related Research (NEGHHR). The updated version is made to be more inclusive, to ensure that all human participants in research will be protected, even those involved in non-health research projects.

Another highlight was the awarding and recognition of the PHREB-accredited Research Ethics Committees. A total of 13 Research Ethics Committees (REC) were awarded with accreditation, with 8 RECs at Level 1, 2 RECs at Level 2, and 3 RECs at Level 3.

In the afternoon, two parallel sessions were held. First, hosted by the UPSCALE Innovation Hub, the University Innovation Fellows (UIF) for Health Demo Day showcased the top seven (7) health-based technologies of the UIF for Health Project that is being funded by the DOST-PCHRD. The demo day became a venue for technology owners to network and engage with industry partners, potential customers, and collaborators. The UIF for Health project is implemented by the UPSCALE Innovation Hub of UP Diliman in cooperation with the UP System, UP Manila, UP Diliman, and UP Visayas Technology Transfer and Business Development Offices.

The second session, an education forum entitled: "How to Prepare a Peer Review Report," was held in partnership with the Philippine Association of Medical Journal Editors (PAMJE). Around 500 participants in this session learned a suggested structure for manuscript review; gained an overview of comments to the editor and comments to authors; and discussed examples on how to prepare a peer review report. After the educational forum, the PAMJE General Assembly was conducted and attended by its 51 members.

Day 2: Opening Ceremonies

In his message during the opening ceremonies, DOST Secretary Fortunato de la Peña recounted what it was like for the health research community 40 years ago. He said, "Before PCHRD was founded 40 years ago, there was no organized body that would provide leadership to all health research initiatives in the Philippines. What is normal today – a coordinated framework, and an enabling environment for health innovators – was just a vision in 1982 that required determination and vigor to make every Filipino's life better."

Meanwhile, in his welcome message, DOST-PCHRD Executive Director Jaime C. Montoya, promised that the Council will take bolder strides moving forward to support our health researchers. "In the past 40 years, the DOST-PCHRD, together with its partners, worked to provide research-based solutions for health. Recognizing the dynamic field of healthcare, we continuously expand and assess the scope of our services to respond to the changing needs of our communities. In the new normal, PCHRD's new life will begin at 40."

The Keynote Message

Ideas should be given a chance to be proven in the context of science and research – UP Manila Chancellor

University of the Philippines Manila (UPM) Chancellor Carmencita Padilla highlighted the importance of believing in research ideas by citing her work on newborn screening in 1996, in her keynote message.

She narrated how she and her mentor Dr. Carmelita Domingo initiated the newborn screening project in 24 hospitals in 1996. The newborn screening test entails getting a few drops of blood from the heel of a newborn to run tests to diagnose certain conditions that can be treated immediately to save the baby from mental retardation and death. Needing to cover 18 private and six government hospitals for an adequate sample size, Dr. Padilla shared how they worked to secure funding for the project from the DOST-PCHRD and UPM. She shared how the support from both institutions paved the way for the research project which became the basis for the National Comprehensive Newborn Screening Program, which is now supported by Republic Act 9288 or the Newborn Screening Act of 2004 Relative to this, she addressed funding agencies to emphasize how important it is to believe in ideas, whether big or small. "Big things come from small ideas. And no matter how small an idea is, they should be given a chance to be proven in the context of science and research," said Dr. Padilla.

Compared to when it started, the program was able to significantly expand its coverage, which now screens for 29 conditions and is implemented by more than 7000 facilities in the country as cited in the Department of Health website. Dr. Padilla proudly reported that through the years, "the program has saved thousands of newborns from mental retardation and death."

In completing research projects, she reminded researchers to keep the greater good in mind and to bring their research output to the people. She also emphasized how the future for health research is a shared responsibility: "With government funding and the academe for a nurturing environment, and the researchers for the continuous supply of new solutions for the old and new issues of the country."

Then, Now, and Futures of Health Research in a changing world: A talk show

One of the highlights of the opening ceremonies was the talk show entitled, "Then, Now, and Futures of Health Research in a Changing World." Health researchers Dr. Nelia Maramba of the University of the Philippines College of Medicine (UPM CM), Dr. Mediadora Saniel of The Medical City, Dr. Doralyn Dalisay of the University of San Agustin (USA), and Dr. Joycelyn Jumawan of the Caraga State University (CSU) shared their journey in conducting research over the years and their vision of the health research landscape in the coming decade. Dr. Eva Maria Cutiongco-De La Paz, Executive Director, National Institutes of Health, UPM, served as the talk show host.

The journey of health R&D

Starting with the growth of health research in the country, the panel discussed the changes in the sector over the decades.

Dr. Maramba shared her experiences as a founding member of the National Integrated Research Program on Medicinal Plants (NIRPROMP). Developed in six months, she shared how the institution came to be. "We had only one goal and that was to serve the needs of the Filipinos, especially in the rural areas." Focusing on improving the access of the Filipino to treatments through herbal medicine, the NIRPROMP has patented at least 10 medicinal plants to date.

Also specializing in drug discovery research is Dr. Dalisay. She pointed out the lack of academic programs and facilities for her desired research area in the 90s which led her to pursue graduate studies in Australia. However, through the DOST's Balik Scientist Program (BSP), she returned to the Philippines to share her expertise on marine microorganisms. She shared updates on her engagement as a DOST Balik Scientist, "For the last four years, we were able to create our own collection of these diverse microorganisms from all over the Philippines." Currently, Dr. Dalisay's team has around 3,000 highly diverse marine sediments stored in a biobank in the USA which may be used for drug discovery.

Representing regional researchers, Dr. Jumawan cited the lack of researchers as one of the major barriers to the growth of health research in the regions. "I believe it is about time to put a premium on programs and scholarships on health research, especially for takers from the regions to increase the number of health researchers," she said. Aside from this, she added that the deficiency of specialized equipment is also a difficulty the regions have to overcome.

On the other hand, Dr. Saniel commended the growth of the health research landscape as a whole. "The breadth and depth of the research that has been done in the country is truly amazing," said Dr. Saniel, emphasizing the importance given by the current health research community in the implementation of the National Unified Health Research Agenda (NUHRA). According to her, this has guided the direction of health research efforts, helping Filipino researchers to be recognized globally through their works.

Despite notable progress, Philippine health research continues to adapt to the most pressing national health concerns. The panel shared some advice to current and aspiring health researchers on how to ensure that health research continues to benefit Filipino communities in the future.

Health research moving forward

Citing her experiences with the NIRPROMP, Dr. Maramba emphasized the role of S&T in providing answers for those who actively seek information. She hopes that researchers will be more receptive to questions and feedback from end-users. "We should be able to give what they [end-users] are asking for as far as information is concerned," she said. According to her, this helped in encouraging the use of herbal medicine, in the context of her work with NIRPROMP.

For Balik Scientist Dr. Dalisay, Philippine health research should be prepared for opportunities amid the widespread

digitalization in healthcare. She envisions interoperable data, sophisticated tests, and early diagnostics to be available among the centers of healthcare in the future. Mentioning the surge of digitalization in healthcare due to the pandemic, Dr. Dalisay believes that these advancements "will harmoniously bring together in order to provide a sustainable well-being to Filipino communities." She added that there could be increased capabilities in diagnosis, intervention to delay or eliminate the onset of diseases, and cure delivery.

On the other hand, Dr. Jumawan expressed her hope for increased support for emerging and regional researchers. She said that funding and training on the conduct of research up to its utilization will encourage more regional researchers to undertake R&D and empower them to apply for grants. She also highlighted the importance of capacitating the regions in health research ethics. "Academic institutions in the CARAGA region have yet to establish their own PHREB-accredited academe-based ethics review committee," Dr. Jumawan said, sharing the current status of health research ethics in her region. "We would really welcome more training in order to increase the number of the members of the committee so we can really assist and accommodate reviewing proposals for professionals as well as students," she added.

Lastly, Dr. Saniel called on the PCHRD to initiate efforts toward the prioritization of research on universal healthcare. "For PCHRD, to really identify what are the priority areas for implementation research for universal healthcare. I think that is urgent," she said. Dr. Saniel also cited antimicrobial resistance and impact evaluation as areas of health research that should be given more attention moving forward.

Day 3: Technical Sessions

Three technical sessions were conducted on the last day of the anniversary main event.

Session 1: Introduction of new R and D programs and PCHRD S and T Fellows

One of the flagship services offered by the DOST-PCHRD is its research grant services that provides funding and assistance to Filipino researchers in the conduct of health research. To ensure that the Council invests in projects that solve pressing, real-world problems; it outlines research priority areas with specific topics for each round of call for proposals. In the first part of this session, three new R&D priorities of the Council were introduced namely:

- Re-emerging and Emerging Diseases
- Digital and Frontier Technologies for Health, and
- Nutrition and Food Safety

With the threat of re-emerging and emerging diseases to public health, the Re-emerging and Emerging Diseases (RED) program is an expansion of the DOST-PCHRD's Dengue and Other Arboviruses program. It supports R&D that generates local and novel technology platforms, therapeutics, preventive measures, surveillance, and control and management protocols for various diseases. The program is intended to equip the country's health systems with research-based solutions and innovations for better disease management and prevention.

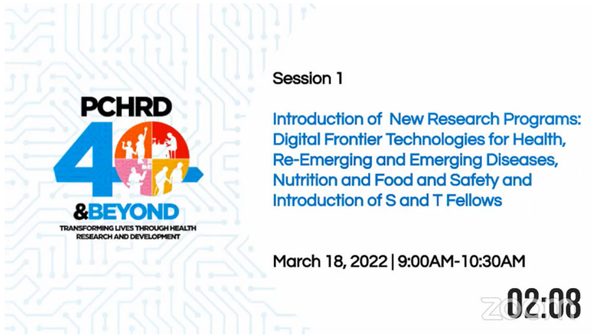
On the other hand, the Digital and Frontier Technologies for Health program builds from the Council's Information and Communication Technology (ICT) for Health program. To respond to eHealth needs emphasized by the implementation of universal health care (UHC), the updated research program now focuses on R&D utilizing artificial intelligence and other elements of the 4th industrial revolution, connectivity platforms and new fields of digitalization.

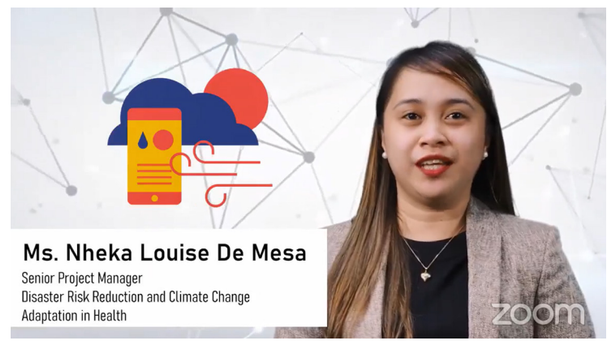
Another program, the Nutrition and Food Safety Program aims to address various malnutrition and food safety issues using science and technology. This research priority area hopes to cover studies on the nutrition of all age groups (pediatric, adolescent, adult, and geriatric), malnutrition and its relation to infectious diseases, use of innovative technologies such as omics for individual diets, fad diets, nutrition for the disabled as well as for athletes or people active in sports, safety of foods sold in the local markets, and tools that can be used to identify and prevent diseases related to food safety.

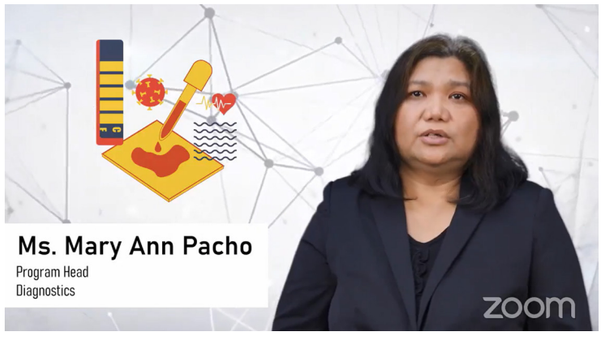
In the second part of the session, six S&T Fellows who participated in various R&D management-related activities such as program conceptualization and assessment, strategy and policy development, and monitoring and evaluation were introduced.

The S&T Fellows deployed in DOST-PCHRD are tasked to focus on specific health research priority areas, are as follows:

- Dr. Aimee Yvonne Criselle Aman for OMIC Technologies for Health
- Dr. Ma. Neda Catalma for Functional Foods, Nutrition, and Food Safety
- Dr. Adam Christian Espiritu for Diagnostics
- Dr. Phoebe Nicole Perez for Biomedical Devices and Engineering for Health
- Dr. Albert Remus Rosana for Tuklas Lunas
- Dr. Ranhel De Roxas-Bernardino for Digital and Frontier Technologies for Health







Session 2: Today and Beyond: Strengthening the country's capacity in research

The second session entitled, "Today and Beyond: Strengthening Country's Capacity in Research" aims to gather some of the Council's staunch partners representing Luzon, Visayas, and Mindanao to converse about their region's achievements, current initiatives, and plans to bolster the country's capacity, including the infrastructure, systemic relationships, scholarships, and ethics in health research.

In this dialogue, Dr. Lyre Anni Murao, Program Director of the Philippine Genome Center Mindanao, Dr. Julius Capili, Director of Cagayan Valley Health Research and Development Consortium, and Dr. Edgardo Tulin, President and University Professor at the Visayas State University, shared about the past, present, and future of health research capacity in the Philippines.
Dr. Capili expressed how the research undertaking in Luzon has improved in the past decades, from being regarded as "just satisfactory" to now having a clear-cut research direction through the establishment of a health research agenda, and appreciating the dynamism of the consortium.

For Visayas, Dr. Tulin highlights, "Health research was not as aggressive but that was a good start for the people in the region." Dr. Tulin recalled that many research initiatives in the region from the past were only focused on antibacterial and anti-microbial properties coming from natural products and indigenous plants, as well as animal research and agriculture-related R&D. He emphasized that the establishment of the Consortium in 1982 is a "very good strategy" for the region as it paved the way for many researchers in the region to be funded by the consortium. As described by Dr. Murao, "In Mindanao, Health research is growing, and it is growing in the right direction." She added that there has been an increased number of proposal submissions, an increased Regional Research Fund, and the existence of big-ticket programs in different institutions in the region.

The session moderator was Dr. Unity Cortez, Chief of Medical Professional Services of the Ilocos Training and Regional Medical Center.

Session 3: Research Utilization: A road to impact

The final session was a one-on-one interview with six experts who have been using results of research to make an impact or create a change in society or in their community. They were as follows: Department of Health (DOH) - Health Policy Development and Planning Bureau Officer-in-charge Dir. Frances Rose Elgo-Mamaril, US Agency for International Development-Science, Technology, Research, and Innovation for Development Chief of Party Dr. Richard Abendan, World Intellectual Property Office- Asia Pacific Bureau Director Atty. Michael Andrew Ong, Philippine Association of Medical Journal Editors President Dr. Cecilia Maramba-Lazarte, Research Institute for Tropical Medicine - Immunology Department Head Dr. Mario Jiz and a Science Communicator based in Singapore Ms. Kamila Isabelle Navarro.

The questions revolved around the experiences of the resource persons in using different pathways in research utilization namely, policy making, technology transfer, journal publication, and information dissemination for the public.

Director Mamaril gave her perspective as someone who works in the DOH. According to her, research is important because it is the backbone of objective and evidence-informed policy planning and program development in their department. She gave emphasis on the importance of health policy in the daily decision-making of the DOH which in turn creates impact in the lives of the Filipinos.

For Dr. Abendan, bigger partnerships with the government and the academe create innovative work in health research that would leverage more impact. As an example, he talked about the partnership of the STRIDE program with the DOST and other government agencies in providing capacity building not only for Filipino researchers but also to science communicators who have an important role in ensuring research results reach the target users..

Attorney Ong, on the other hand, emphasized the importance of being knowledgeable about the Intellectual Property and Technology Transfer Laws. According to him, researchers should know the terms of transacting and licensing in negotiating research outputs, and ensuring that it is protected. In this way, researchers would reap the full commercial benefits of their discoveries or innovation.

It is through publication that research results are disseminated to other researchers that's why Dr. Lazarte encouraged researchers to publish their research results in respectable journals to contribute to the body of knowledge, thus, make an impact. Dr. Lazarte also reminded researchers, especially the beginners, the importance of having good mentors who can guide and direct them in choosing topics that will achieve the utmost impact for the community.

Dr. Jiz and Ms. Navarro's interview revolved on the importance of translating science information for the public. According to Dr. Jiz, researchers, especially those who gain support from the government, have the responsibility to tell the people how good research investments have been and how these investments help in capacity building and in enhancing research facilities. He emphasized that communicating science is vital in gaining the public's trust that will lead to better interventions, health programs, and improve the lives of the Filipino community.

Ms. Navarro, on the other hand, specified time, training, and local science culture as some of the challenges in communicating science in the country. She also had given health researchers some tips in effectively communicating by identifying the audience and keeping the messaging short and simple. "Science communication is not a one-time thing, it's an ongoing skill that has to be learned and improved continuously," she added.

The session moderator was Dr. Jason Ligot, Director for Development Communication at Organic Intelligence.

Pagpupugay at Pasasalamat: 40 Taon ng Pananaliksik Pangkalusugan Para sa Pilipino

A Recognition Day

To recognize the notable contributions of Filipino health researchers and research institutions in realizing the mission of the DOST-PCHRD, a hybrid event entitled, "Pagpupugay at Pasasalamat: 40 Taon ng Pananaliksik Pangkalusugan Para sa Pilipino," was held on 10 June 2022, at the Philippine International Convention Center (PICC), Pasay City and live streamed in DOST-PCHRD Facebook page.

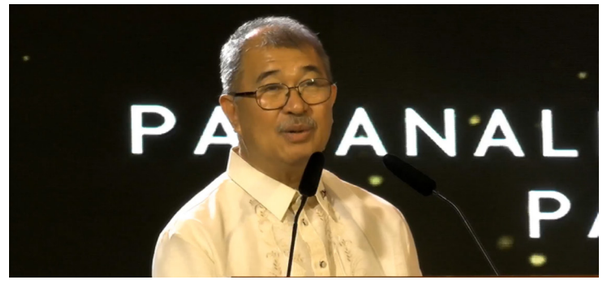
Certificates of appreciation were given to Technical Reviewers, Technical Working Group, Technical Advisory Group, Partner Institutions, Regional Health Research and Development Consortia, Philippine Biomedical Device Innovation Consortium, PNHRS Week Regional Host, media members, DOST-PCHRD Governing Council members, past PCHRD directors, and DOST officials.

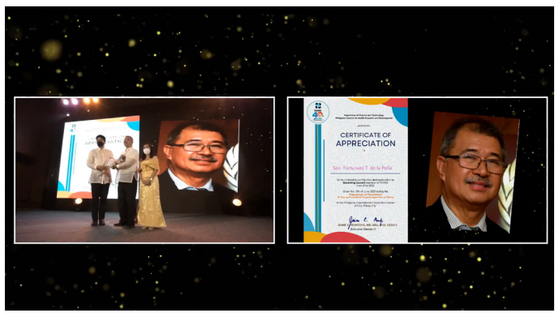
Present and past PCHRD staff were also in attendance. DOST Secretary Fortunato de la Pena, who was also recognized for his service and support to PCHRD, gave a heartfelt message:

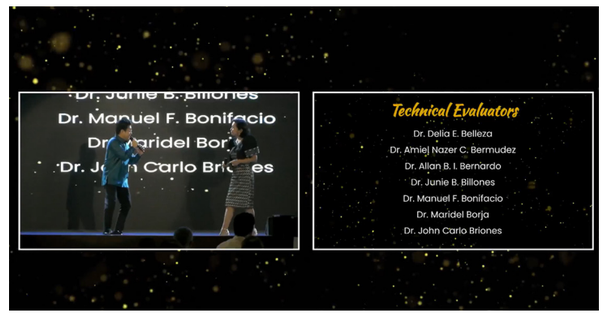
"Ako ay nagagalak na masaksihan ang pagbibigay-pugay at pagkilala sa lahat ng Pilipinong siyentista, mananaliksik, at mga katuwang ng PCHRD sa pananaliksik. Kami ay lubos na nagpapasalamat sa inyong serbisyo para sa bayan gamit ang siyensya upang makapagbigay solusyon sa mga isyu at problemang pangkalusugan na kinakaharap ng bawat Pilipino."

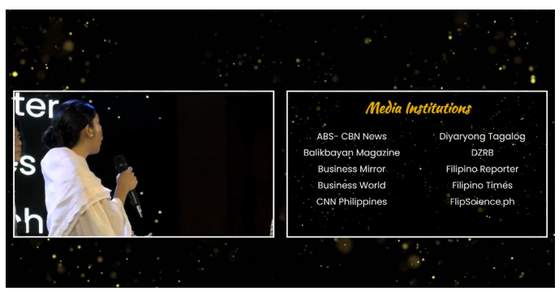
Isay Alvarez, and her husband Robert Seña, the Bayanihan, National Dance Company of the Philippines, and some veteran poets such as Bong Cabrera, Liway Perez, Pere Santiago, and Vince Conrad, performed in the said event.

PCHRD Services Clinic. To conclude the year-long anniversary celebration, a PCHRD Services Clinic was held last 14 December 2022 at the Philippine International Convention Center as a side activity of the mental health public forum. Participants of the forum was able to get the latest information about the services and programs offered by the DOST-PCHRD from research proposal making up to research utilization.









Together with the Central Luzon Health Research and Development Consortium (CLHRDC), the DOST-PCHRD organized the 15th Philippine National Health Research System (PNHRS) Week at the Clark Marriott Hotel, Pampanga on 8-12 August 2022. The event was conducted in a hybrid format with limited face-to-face and virtual conference through Zoom and Facebook live. With the theme, "Health Research: Responding to Challenges towards National Recovery and Resiliency," the celebration highlighted the experiences, best practices, and discoveries in coping with the pandemic and other natural calamities and disasters that can be utilized and translated into the 6Ps (Publication, Patent, Product, People Services, Places and Partnerships, and Policies) and 2Is (Social and Economic Impact) as means for the country's recovery, resiliency, and nation-building.

The physical event was attended by 250 delegates from all 17 regions of the country including BARMM, and around 6,900 virtual participants joined the main conference through Zoom and Facebook live.

Aside from this, the celebration had 14 pre-conference sessions and three plenary sessions in the main conference attended by an average of 3,000 participants in the virtual platform.

For the first time in the history of PNHRS, the President of the Republic of the Philippines attended the PNHRS Week celebration. President Ferdinand Marcos, Jr. graced the event as the keynote speaker during the opening ceremonies of the main conference.

He expressed his administration's full support to the health research community, and vowed to push for the establishment of the Virology and Vaccine Institute of the Philippines (VIP) and the Center for Disease Control (CDC). He also expressed his gratitude to the health research community for its contributions to the country's pandemic response and encouraged them to continue the collective goal of improving every Filipino's life.

The heads of the PNHRS implementing agencies, Undersecretary Maria Rosario Vergeire of the Department of Health (DOH), Chancellor Carmencita Padilla of the University of the Philippines Manila, Chairman J. Prospero De Vera III of the Commission on Higher Education (CHED), and DOST Secretary Renato Solidum, represented by the DOST Region III Director Julius Caesar Sicat, also graced the celebration and addressed the health research community through each of their messages.

The plenary sessions at the main conference addressed two (2) subthemes. First, "Pandemic to Endemic: Shaping Disaster Resilient Communities from COVID-19 Experiences" which highlighted how the experiences from COVID-19 and other disasters shaped disaster resilience across different sectors, especially the health research community. Second, "Build Back Better for National Recovery and Resiliency," prompted that as the pandemic gradually abated in our local context, the direction of national recovery should not be a return to "business as usual" but to shift to a more resilient Philippines.

The pre-conference events featured the following sessions, competitions, workshops and committee meetings:

- Ethics Forum and Training,
- Intellectual Property and Technology Management (IPTM) Call Conference,
- Enhancing PNHRS M&E System,
- Strengthening PNHRS Resource Mobilization,
- Oral Research Paper Presentation,
- Visual Abstract Poster Competition,
- 3-Minute Pitch to Policymakers Competition,
- National Medical Writing Workshop,
- PNHRS Research Agenda Committee Meeting, and
- RHRDC Secretariat Meeting.

The awarding ceremonies for the Philippine Health Research Ethics Board (PHREB) Research Ethics Committees (REC) Accreditation, Oral Research Paper Competition for the Grantees of the DOST-PCHRD Undergraduate Thesis Grant in Natural Products, Research Poster Competition (Student and Professional Category), 2021 Best Mentor Cluster and National Winners, and 2022 Gelia Castillo Award for Research on Social Innovations in Health was also conducted during the closing ceremonies. It was announced that the next PNHRS host will be the Eastern Visayas Health Research and Development Consortium (EVHRDC).

Visual Abstract Poster Exhibit and Competition

(Student and Professional Category)

A successfully completed health research study, especially with substantial results, must be communicated to benefit key stakeholders. To foster researchers' presentation,and communication skills, a visual abstract poster exhibit and competition was held as part of the 15th PNHRS Week celebration.

The Visual Abstract Poster Competition – Student Category was held on 9 August 2022 via Zoom Video Conference while the Professional Category was held on 10 August 2022 at the exhibit area in Clark Marriot Hotel, Pampanga. The competition requires researchers to translate the results of the abstract of their study in visual format for easier dissemination to stakeholders.

Winners of the Professional Category

1st Place	Chuckcris Tenebro	University of San Agustin
2nd Place	Dr. Penuel David	Centro Escolar University - Malolos Campus
3rd Place	Dr. Andy Catulin	Cagayan State University
People's Choice	Mheljor General	Bicol University

Winners of the Student Category

1st Place	Anne Gwyneth Traya	University of the Philippines Visayas
2nd Place	Norianne Bolibol	Mariano Marcos Memorial State University
3rd Place	Jaira Jade Milandres	Cagayan State University
People's Choice	Jesille Mae Legarta	University of the Immaculate Conception

Joint DOST, DOH, CHED and UP Manila

Administrative Order No. 01

Series of 2022

THE REVISED IMPLEMENTING RULES AND REGULATIONS

of

Republic Act No. 10532

"The Philippine National Health Research System Act of 2013"

WHEREAS, the Philippine National Health Research System (PNHRS) Act or Republic Act No. 10532 became effective on 1 June 2013 and its Implementing Rules and Regulations (IRR) (Joint DOST-PCHRD, DOH, CHED and UPM-NIH Administrative Order No. 001 s. 2013) became effective on 15 November 2013;

WHEREAS, the IRR shall be reviewed every three (3) years pursuant to Rule 32; and any amendments shall be done in writing and be approved by all implementing agencies as stated in Rule 31 of the same IRR;

WHEREAS, a series of consultations was conducted from 08 April to 28 May 2019 to determine the applicability of the IRR with the law; as such amendments were made and reviewed by all concerned stakeholders and revised IRR was completed on 25 November 2019;

NOW THEREFORE, the following Joint Administrative Order of the Department of Science and Technology through the Philippine Council for Health Research and Development, Department of Health, Commission on Higher Education and University of the Philippines hereby promulgates the revised rules and regulations implementing Republic Act No. 10532.

PNHRS Law IRR Registration and Publication

In 2019, the PNHRS implementing agencies came up with a revision of the Implementing Rules and Regulations (IRR) of the PNHRS Act of 2013 or RA 10532.

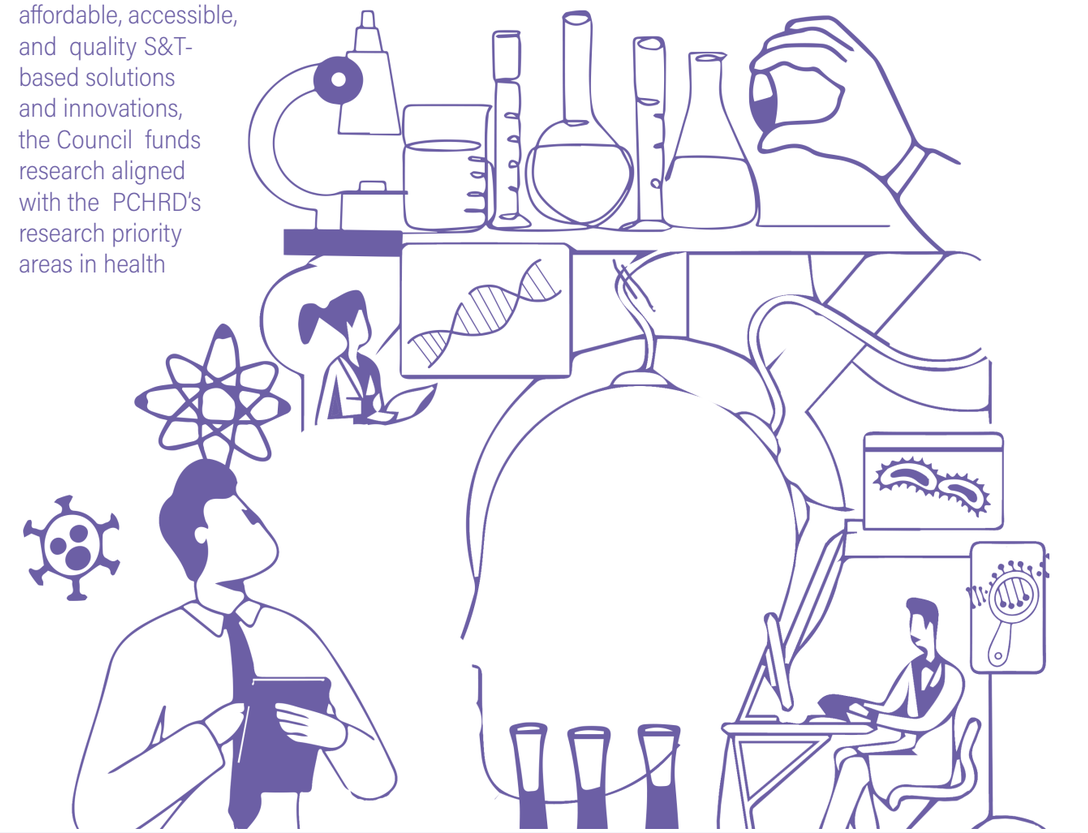
The Council, being the PNHRS Secretariat, finally received the hand-signed copies of the revised IRR on 19 January 2022, and immediately facilitated the rectification of the revised IRR's Joint Administrative Order Number in order to avoid any technical, procedural and/or legal implication.

The PNHRS Secretariat then facilitated its registration to the University of the Philippines-Office of the National Administrative Register (UP-ONAR) and publication to the Official Gazette. The revised IRR was published to the Official Gazette last 19 December 2022, and was filed in the UP Law Center on 25 April 2022. The revised IRR was made effective on 3 January 2023.

PART 1

RESEARCH AND DEVELOPMENT

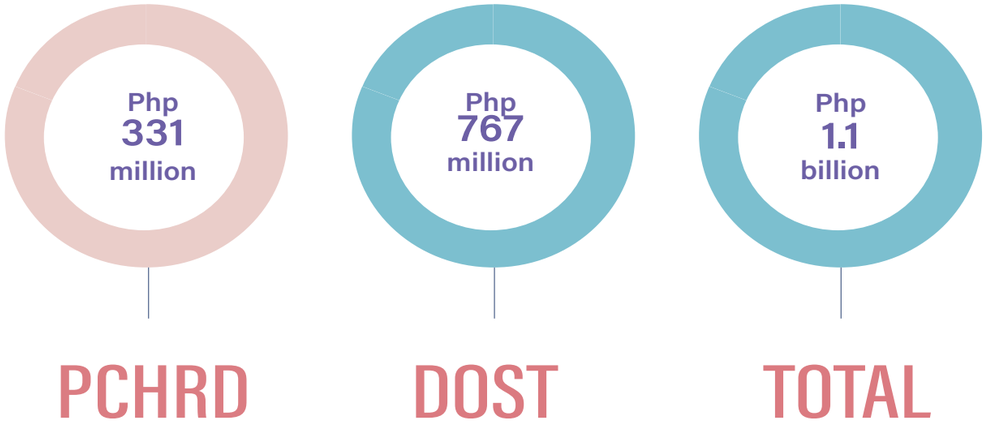
To ensure that research results support the development of affordable, accessible, and quality S&T-based solutions and innovations, the Council funds research aligned with the PCHRD's research priority areas in health



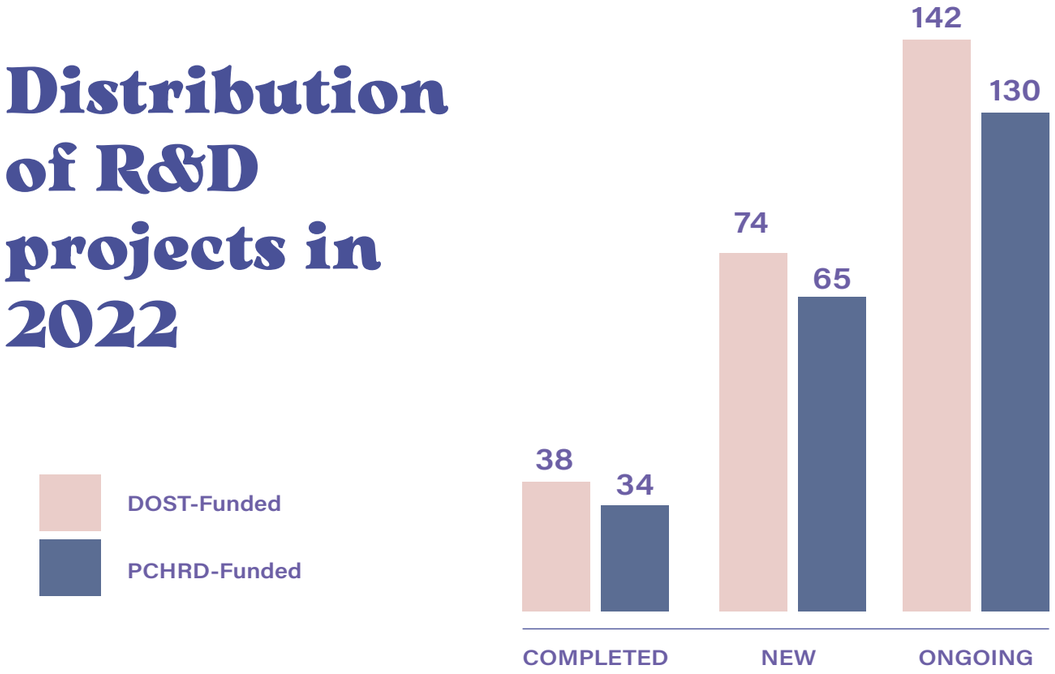
R&D Highlights

To ensure that research results support the development of affordable, accessible, and quality S&T-based solutions and innovations, the Council funds research aligned with the PCHRD's research priority areas in health

Research Expenditures in 2022



Distribution of R&D projects in 2022



100%

Budget utilization rate in 2022

Ten priority areas in health research

- Tuklas Lunas®
- Functional Foods
- Nutrition and Food Safety
- Mental Health
- Disaster Risk Reduction and Climate Change Adaptation in Health
- Omic Technologies for Health
- Biomedical Devices Engineering for Health
- Re-emerging and Emerging Diseases
- Digital and Frontier Technologies for Health
- Addressing and Responding to COVID-19 through Health Research (ARCHER)

TUKLAS LUNAS ®

The Tuklas Lunas® Program is the drug discovery and development program of the DOST and PCHRD which envisions to "produce world-class medicines derived from the Philippine biodiversity, leveraging on local expertise".

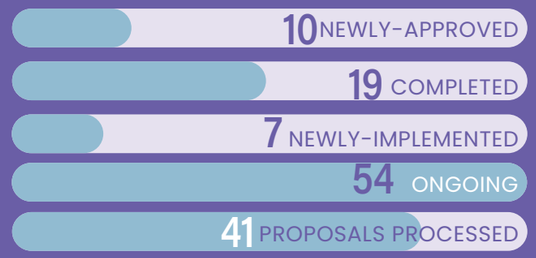
Building on the experience and successes of the National Integrated Research Program on Medicinal Plants (NIRPROMP) which produced lagundi and sambong herbal drugs now valued to be a PhP 1 billion industry, Tuklas Lunas aims to further tap into the potential of Philippine biodiversity as sources of drug candidates, contribute to addressing local need for more safe, effective, affordable and accessible locally-developed health products; and to the growth of the local natural products and pharmaceutical industry.

Recognizing that significant resources are needed to bring one (1) successful drug candidate from early discovery to commercialization, the Tuklas Lunas program has adopted a strategic framework that pursues two tracks of development: (1) Herbal (Biodiversity/Folkloric) track: development of standardized herbal drugs, (2) Drug (Synthesis/Pure Compound) track: the identification of high-value compounds that can be offered for early licensing for further development as drugs. In the process, several outputs may be produced such as functional food, standardized herbal supplements, standardized herbal drugs, and pure drug candidate compounds.

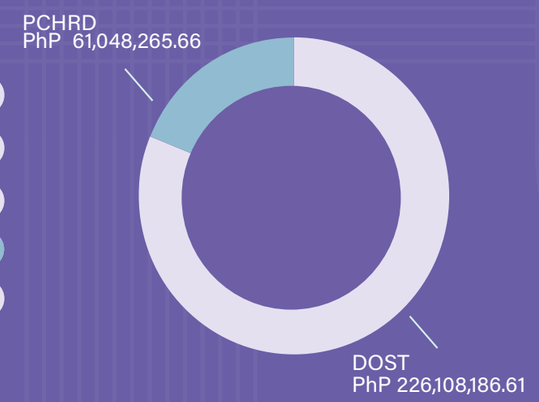
The Tuklas Lunas® program supports the following:

- Building institutional and human capacity for discovery and development of natural products through R&D grants;
- Developing bioresources (unique in the regions) into natural products; and
- Bringing candidate substances/compounds to a stage where they are sufficiently de-risked and ripe for early licensing (not necessarily for full product development).

STATUS OF PROJECTS



RESEARCH EXPENDITURES IN 2022



World-class medicines derived from the Philippine biodiversity

Tuklas Lunas from Endemic/Indigenous Plants in Bicol with Pharmacological Activity against Diabetes, Obesity and Hypertension

IA: Bicol University

- Conducted testing to confirm the bioactivity and safety of extracts from 23 different plant species:
- Four plant extracts confirmed to be non-toxic and have anti-hypertensive properties
- Two plant extracts confirmed to be non-toxic and have anti-diabetic properties
- Five plant extracts confirmed to be non-toxic and have anti-obesity properties

Discovery and Development of Health Products (DDHP): Disease-Specific Bioactive Hits from Terrestrial Organisms

IA: UP Manila, UP Diliman, UP Baguio, Benguet State University, UP Mindanao, and Pascual Laboratories

- Produced 247 extracts obtained from priority samples
- Obtained 252 bioactive and non-toxic semi-pure subfractions (against disease indications such as diabetes, inflammation, hypertension, gout and obesity) from the 247 extracts generated
- Submitted 64 fractions for secondary assays

Potential Anti-Cancer Leads from Plants in Region XII

IA: University of Southern Mindanao

- Revealed that out of 66 crude extracts from 46 plant samples, 25 plants showed antiproliferative and 30 with anti-migratory activities on liver cancer cell lines (HepG2). All are deemed safe for liver and kidney cells except for one sample which should be taken with precaution.
- Confirmed the anticancer activity of 23 crude plant extracts on human colorectal cancer cell lines (HCT116).
- Revealed the top 15 plant samples that will be subjected for separation, isolation, and purification to determine the anticancer compounds responsible for its bioactivity.

Documentation, Standardization, and Formulation of Dosage Forms from Indigenous Plants and Microorganisms with Bioactivities

IA: UP Baguio, Benguet Statue University, and Saint Louis University

- Isolated compounds of the class epipolythiodioxopiperazine from fungi with anti-infective activities against ESKAPE pathogens
- Created an online repository of information regarding medicinal plants
- Generated five compounds with beta-lactamase inhibitory activities
- Standardized non-toxic alcoholic dosage form with anti-diabetes properties
- Formulated antimicrobial creams against *Staphylococcus aureus*, MRSA, and *Pseudomonas aeruginosa*

Securing the Health of the Filipino for the Next Millennium: The National Institute of Health, National Clinical Trials and Translation Center (NIH NCTTC)

IA: UP Manila - National Institutes of Health

Established SOPs for the operational procedure of the facility and initiated partnerships with 17 local and international organizations

Nanostructured Herbal Extract of *Momordica charantia* (Bitter Melon/ Ampalaya), *Allium sativum* (Garlic) and *Curcuma longa L.* (Turmeric) as Antidiabetic Agents

IA: DOST-Industrial Technology Development Institute

- Developed the preliminary formulation (cocktail) of three herbal extracts, which were tested for antidiabetic activity in rats.

Chemical and Biological Characterization of Pure Bioactive Compounds from Kadios (*Cajanus cajan*) Seeds and its Topical Formulation Studies

IA: University of San Agustin

- Identified two antibiotic markers in *C. cajan* seeds against *S. aureus* strains, including the multi-drug resistant strain (MDRSA)
- Elucidated the mechanism of action of the main antibacterial compound against MDRSA
- Formulated different topical antibiotic formulations incorporating *C. cajan* seeds antibiotic secondary metabolites, in partnership with Maridan Industries

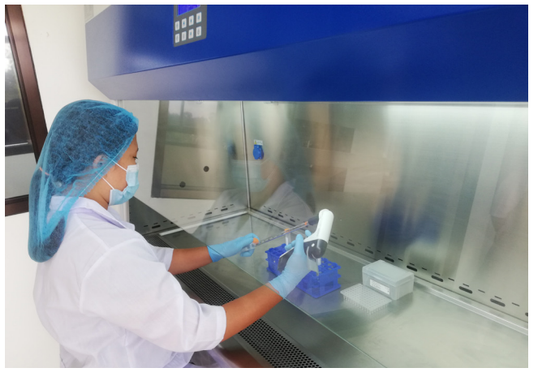
Compounds Active Against Cancer Cell Lines (HCT116, MCF7, A549) from Priority Extracts (Phase 2)

IA: UP Diliman

- Ongoing evaluation of 15 priority plants from which 13 are nontoxic and active. Bioassay-guided isolation work on the priority active fractions is also ongoing.

2022 Tuklas Lunas® Accomplishments








Development of Anti-inflammatory Herbal Products from Iluko Indigenous Plants

IA: Mariano Marcos State University

- Found that five (5) standardized spray-dried extracts are bioactive through enzyme-based assays. Results indicated that the extracts are safe for the liver, heart, and kidney cell lines used for the study.
- Ongoing pre-formulation studies to determine the most stable, effective and safe dosage form through the establishment of the kinetic rate profile, compatibility with the other ingredients and physico-chemical parameter of the spray-dried extracts.

Discovery and Development of Health Products [DDHP]: Formulation, Standardization, and Metabolic Profiling of Disease-Specific Top-Tier Plants for Pre-Clinical and Clinical Development

IA: Pharmalytics, Pascual Laboratories Inc., Herbanext Laboratories, Inc, and UP Diliman

Produced and extensively studied 17 plant extracts, and accomplished the following:

- Completed spray-dried ethanolic extracts, pharmacopeial testings, and acute oral toxicity testings in four (4) out of five (5) plant samples.
- Subjected 8 out of the 12 spray-dried extracts under preliminary excipient formulations.
- Putatively identified 15 compounds
- Completed method development/optimization for four (4) out of five (5) plants.

Establishment of the Visayas NMR Laboratory: Enabling the countryside with the power of magnetic resonance for drug discovery and a forward-looking pandemic response

IA: University of San Agustin

- Procured the 600 MHz NMR spectrometer system
- Prepared the design and renovation of the NMR laboratory and the laboratory standard operating procedure
- Signed MOAs with TLDCs from Visayas and Mindanao

Confirmatory and Orthogonal Assays to Eliminate Artefactual Drug Bioactivities (Phase 3): Continuing Needs of Tuklas Lunas Program

IA: UP Diliman

- Optimized Xanthine oxidase and Uric acid quantification assays.
- The following were performed to validate primary assay hits for each disease indication:
    - Diabetes – Glucose Uptake Assay of 36 samples
    - Hypertension – Exogenous ACE Inhibition Assay of 47 samples
    - Inflammation - DCFDA Assay of 21 samples and COX-2 Activation Assay of 33 samples
    - Obesity - Lipid Accumulation Assay via Triglyceride Quantification of 5 samples
    - Cancer - RealTime-Glo MT Cell Viability Assay of 312 samples, Caspase Glo 3/7 Apoptosis Assay of 149 samples, Scratch Wound Assay of 235 samples.

Discovery and Development of Natural Products from Mindanao Marine Resources

IA: Mindanao State University – Iligan Institute of Technology

Established the following assays for cancer:

- Anti-proliferative orthogonal and secondary assays: RealTime-Glo cell viability
- Pro-apoptotic primary and secondary assays: Caspase-Glo 3/7 Apoptosis assay and Caspase-Glo 8 assay

Evaluated the following:

- Pro-apoptotic and anti-migration activity profiles of 100 sponge extracts, 16 seahorse and two (2) pipefish extracts.
- Pro-apoptotic and anti-migration activity data of 27 Phase 1 sponge extracts
- Four (4) candidate priority non-toxic active anti-proliferative Phase 2 fractions
- One candidate priority non-toxic active pro-apoptotic Phase 1 fraction
- One antiproliferative seahorse extract and three (3) anti-migratory seahorse extract
- One (1) bioactive novel sphingolipid isolate and six (6) bioactive isolates
- One (1) antiproliferative seahorse extract and 3 anti-migratory seahorse extracts.

Metabolomics-driven Discovery of Antimicrobial Drug Leads from Marine-Sediment Derived Actinomycetes of Iloilo

IA: University of San Agustin

- Identified three (3) lead isolates from marine sediment-derived actinomycetes for prioritization for further studies in its Phase 2 project, which produced nine (9) antibiotic and anticancer leads

Early-Stage Development of Antibiotic and Anticancer Leads from Philippine Marine *Streptomyces*

IA: University of San Agustin

- Established the biological and chemical profiles of 13 semi-purified fractions from one of its 3 lead isolates during the first quarter of its implementation

Microwave-Assisted Synthesis, Characterization and Molecular Docking Studies of Quinoline-4-Carboxylic Acids and Hydrazide

IA: UST-Research Center for the Natural and Applied Sciences

- Synthesized a total of six (6) hit 2-substituted quinoline carboxylic acid derivatives in large scale

Discovery and Development of Health Products – Marine Component (Phase II)

IA: UP Diliman Marine Science Institute

- Taxonomically described 2 of 3 priority sponges, validated 1 of 3 priority sponge
- Taxonomically identified 27 out of 28 priority MMOs using their 16S rDNA sequence (AOL group)
- Successfully harvested the metabolites of 3 out of 4 priority MMOs
- Extracted a total of 28 priority MMOs for their gDNA. PCR amplification of their 16S rRNA gene were done for taxonomic identification

Synthesis and Derivatization of Disease-specific Bioactive Hits and Lead Compounds (Phase II)

IA: UP Diliman, Mindanao State University - Iligan Institute of Technology, and University of Sto. Tomas

Studied 1,232 samples for in-silico / molecular docking work and synthesized 354 compounds to date. These are being submitted to the ADMET program for the conduct of the different assays to determine the best drug candidate based on their physico-chemical, biophysical, and pharmacokinetic properties.

Bridging Efficacy and Safety: IND-enabling Suite of ADMETox Assays

IA: UP Diliman, University of San Agustin, and Pharmalytics Corporation

- Optimized most of its assay protocols for the determination of the physico-chemical properties, cytotoxicity, plasma stability, and distribution of bioactive iterations of the lead compounds
- Conducted qualitative and quantitative analyses (via LCMS and UHPLC) of synthetic compounds after cell-based and animal-based assays
- Subjected 4 out of 7 compounds for imaging analysis. A total of 595 out of 595 cryosections are ready for analysis through MALDI-MSI.

Philippine Biorepository Network

by Lourdes Cardenas
University of the Philippines Los Baños, Institute of Biological Sciences
(as of 2022)

Establishing biorepositories for Philippine medicinal plants will support further research and their conservation. To maximize the potential of biobanking in the Philippines, the program aims to set up a central, coordinating network of institutions that will biobank indigenous medicinal plants and their associated biomaterials from the country.

The PBN has five (5) component projects under the leadership of Dr. Lourdes Cardenas in coordination with Prof. Renerio Gentallan, Dr. Elena Catap, Dr. Ma. Anita Bautista, and Dr. Arturo Lluisma. Specifically, the program aims to:

- Generate and safeguard information on the different levels of appraisal of selected medicinal plant species with the application of bioinformatics;
- Establish a repository of medicinal plants specimens, namely, seeds, live plants, extracts, genomic and transcriptomic materials, part of which will be used for research;
- Maintain propagules from these medicinal plants; d) to develop or adopt standard operating procedures (SOPs) that support high quality biobank collection and operations; and
- Serve as the hub of other initiatives and institutions for the extensive and intensive study of Philippine medicinal plants.

The program established biobanking facilities that can cater live plants, seeds, crude plant extracts, and the plants' DNA and RNA. All the information generated by the four (4) projects would be housed into a single database management system for easier retrieval of information. The established medicinal plants garden showcases over 80 species of selected medicinal plants.

The program collected, characterized, and conserved Philippine medicinal plant genetic resources for the establishment of the seed bank. During the project implementation, 1,486 accessions of more than 45 medicinal plants were collected from 12 different provinces. About 83% of the total collection is stored in the field and/or in low-temperature storage while the remaining percentage of the collected plants were not able to survive. A total of 23 descriptor lists for medicinal plant species with no descriptor lists were formulated and 253 accessions were characterized in situ and ex-situ. Using the morphological characterization data, 10 medicinal plant species were assessed for intraspecies diversity.

The plant extracts/compounds centralized repository housed the extracts and compounds from 10 plants considered as priorities by the Department of Health and 14 plants recommended by the private herbal industry collaborators. Chemical analyses of the plant extracts on their shelf-life and stability that included color stability and LC-MS & UHLC profiles for a specific period of time were undertaken and recorded in the database. A database was developed to link all of this information for accessibility via the laboratory information management system developed for the PBN Program, and will be linked with the facility's website (biopex.org.ph).

The program was also able to establish a DNA/RNA bank which currently contains 210 DNA and 206 RNA from the 10 DOH-Recommended plants and the 10 herbal industry-utilized medicinal plants. These are kept and maintained by the National Institute of Molecular Biology and Biotechnology (NIMBB), UP Diliman.

Lastly, the PBN developed a Philippine Medicinal Plant Biobank Data Management System. Data model implemented in the current data warehouse is useful for biorepositories of biological samples and extracts/compounds.

Standardized and Safe Tawa-tawa:

Filling in the Final Gaps for a Clinically-proven Nutraceutical Product

Dr. Jonel P. Saludes
Center for Natural Drug Discovery and Development (CND3) of the University of San Agustin and Herbanext Laboratories, Inc.

Tawa-tawa or *Euphorbia Hirta L.* is believed to have the potential for the treatment of dengue-induced thrombocytopenia -- a deficiency in platelets that increases the risk of bleeding. While tawa-tawa is already used in folkloric and traditional medicine, there is still a need to develop a standardized commercially available tawa-tawa herbal preparation that is backed by evidence.

Led by Dr. Jonel P. Saludes with co-investigators, Mr. Paul Felipe S. Cruz and Ms. Aneline P. Tonolones, the project aims to develop a nutraceutical effervescent tablet from standard aqueous tawa-tawa extracts that is proven to be safe and potentially effective in increasing thrombocytes or the platelet count.

Completed last May 31, 2022, the project accomplished nine notable formulations of laboratory-scale production of tawa-tawa effervescent tablets with varying percentages of excipients. One final formulation was selected and was subjected to pilot-scale production.

A 10-kilogram batch of effervescent granules were produced and approximately 2500 effervescent tablets were formulated.

These effervescent tablets were packaged in moisture-proof containers made of polypropylene (blue) and polyethylene (cap) materials. Each tube contained 14 Tawa-tawa effervescent tablets with silica gel desiccant. Stability studies were conducted in different storage conditions. The application for certificate of product registration (CPR) has been submitted and filed with the Philippine FDA.

The project also employed fractionation, chemical profiling through LC-MS analysis of the tawa-tawa crude extract and putative identification of the compound/s responsible for anti-thrombocytopenic activity.

Completed last May 31, 2022, the project received sponsorship and funding through the DOST's Collaborative Research and Development to Leverage Philippine Economy (CRADLE) Program with an approved budget of Php 4,999,999.00.

Anti-inflammatory Compound/s from Select Ferns in Mindanao

Dr. Gina Barbosa
Central Mindanao University

Completed last July 2, 2022, the project evaluated the potential of frond samples from four select fern species in Mindanao as sources of anti-inflammatory compounds.

In turn, the project may offer scientific basis to pharmaceutical companies and natural products research enthusiasts as they carry out drug discovery studies.

The team conducted initial anti-inflammatory activity testing in vitro enzyme inhibition of 15-LOX and COX enzymes. Toxicity of the bioactive fractions against kidney, liver, and heart cells were also evaluated, while putative identities of compounds in bioactive fractions were determined in the dereplication experiments.

Based on the results obtained, the following generalizations were made:

- The select fern extracts underwent fractionation to separate the extracts into various components or fractions, and resulted in a total of 55 fractions. Upon bioactivity determination using enzyme-based assays (COX-2 and 15-LOX inhibition assay), the crude ethanolic extracts and solvent partitions gave significant anti-inflammatory activity. Out of 55 fractions, 18 are considered active against 15-LOX enzymes, while 31 fractions are active and selective COX-2 inhibitors.
- Based on toxicity tests, 30 of 42 bioactive fractions were determined to be non-toxic to liver, kidney, and heart cells, which could help explain or support the traditional use of these fern species in the treatment of various diseases.
- Non-toxic bioactive fractions were subjected for orthogonal assays which are complementary or confirmatory anti-inflammatory assays. Results of the orthogonal assays suggest potential bioactive fractions.
- Putative identities of compounds in bioactive fractions have been determined in the dereplication experiments. Dereplication is the rapid identification of known compounds present in a mixture, and is crucial to the fast discovery of novel natural products.
- Isolation of compounds from fractions with potential weight resulted in two (2) Liquid chromatography–mass spectrometry (LC-MS) pure isolates.

The project is part of the CMU-TLDC's thrust to explore the potential of underutilized fern species within the proximity of the university.

Discovery and Development of Health Products – Marine Component (Phase II)

Dr. Lilibeth A. Salvador-Reyes
Dr. Arturo O. Lluisma
University of the Philippines Diliman, Marine Science Institute

The Discovery and Development of Health Products – Marine Component Program, implemented by the UP Marine Science Institute and its collaborating institutions, is one of the big-ticket projects under the Tuklas Lunas Program of the DOST-PCHRD. Commencing its research in 2014, the DDHP Marine Program has taken the Philippines' high marine biodiversity to their advantage focusing on the development of anti-pain and anti-neurodegeneration, as well as anti-infective and anti-cancer drug candidates, particularly from the Conoidean venom peptides and sponge-associated microbial natural products respectively.

The second phase will build on the accomplishments of the first phase to further advance marine drug discovery efforts in the country. In particular, the program will pursue further characterization and development of promising compounds discovered in Phase 1; significantly increase the current pool of novel compounds for screening, scale up the screening effort, and capitalize on new assay technologies and approaches to enhance detection of range of bioactivities; and further develop the Program's capability and infrastructure to undertake more efficient, effective, productive, and sustained drug discovery and development campaigns.

Among the accomplishments of the program to date include the following:

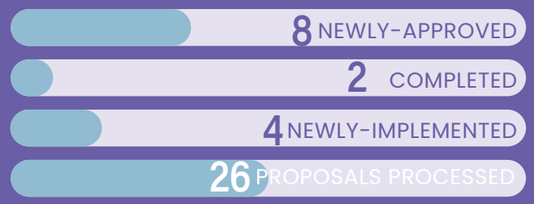
- 2200 venom fractions generated from 22 Conus species
- 20 chemically characterized bioactive conotoxins, 10 of which to be submitted for invention
- disclosure and technology transfer to potential partners
- One patent grant filed for a Somatostatin-like peptide from Conus rolani (Consomatin Ro1)
- Ongoing renovation for 1 cell culture facility to develop cell-based ion channel assays.
- Chemical library of 4,274 extracts and fractions and 112 marine-derived pure compounds
- 2,832 marine microorganisms in microbial biobank
- Established a medium scale open-sea mariculture and a flow through aquaria system for marine sponges
-

FUNCTIONAL FOODS

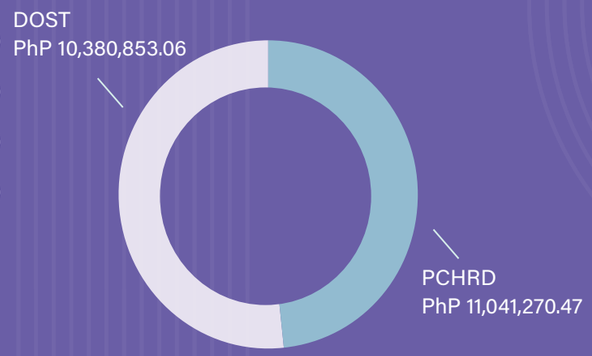
The Functional Foods Program focuses on research tackling crops and food products that have possible health advantages beyond their distinctive nutritional benefits for the prevention of non-communicable diseases. This year, the program monitored two projects for completion, four ongoing projects, and eight newly approved projects. Aside from R&D, a major initiative under the program was the spearheading of the development of the Guidelines for Functional Food Claims.

In the coming years, the Functional Foods Program is expected to put focus on enriching research on crops under the program's priority commodities, particularly, those lacking initial studies or with limited data. In addition, the program is expected to have further collaborations in 2023, strengthening local and international ties for the enhancement of the program.

STATUS OF PROJECTS



RESEARCH EXPENDITURES IN 2022



Health benefits of wines produced from seaweeds

Prof. Hilario S. Taberna, Jr.
Iloilo Science and Technology University

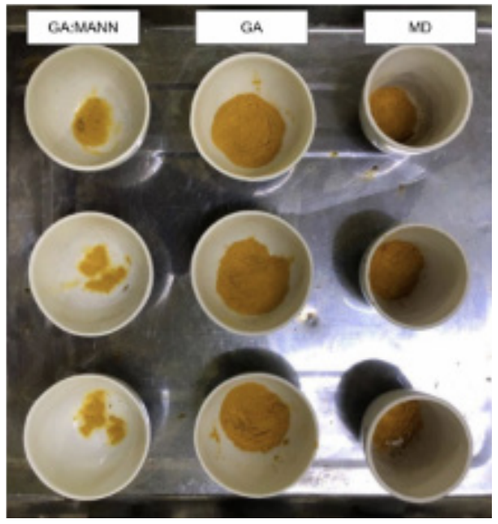
Despite initial studies on the possible health benefits of wines produced from Philippine seaweeds, these commodities continue to be underutilized and have little commercial value.

To encourage the use of seaweeds in the production of food products, a project by Prof. Hilario S. Taberna, Jr. of the Iloilo Science and Technology University explores the potential health benefits and safety of wines produced from green, brown and red seaweeds sourced from Northern Iloilo.

The team's activities in 2022 included the analysis of the bioactive chemicals present (phytochemical screening) in the seaweeds and their concentration in the samples (spectrophotometry). The test provided information on the total phenolic content, total flavonoid content, total tannin content, and total antioxidant capacity.

Following this, the fermentation and production of wines were conducted. The wines are also set to undergo the phytochemical screening and spectrophotometry. The project is in support of the initiative of the provincial and municipal local government units of Northern Iloilo to bolster the seaweed industry, as well as to provide food products that are beneficial to the health of consumers.

CRADLE Projects



Discovering Liquid Gold from Turmeric

Mr. Paul Felipe S. Cruz
Herbanext Laboratories, Inc.

Although many products on the market contain standardized curcuminoids or antioxidant compounds derived from turmeric, little work has been done to characterize bioactive, water-soluble compounds in turmeric such as turmerin and beta-turmerin. To address this research gap, this study will develop a spray-dried, water-soluble turmeric extract that can be used in the commercial production of functional foods.

Conducted in Herbanext Laboratories, Inc. in Bago City, Western Visayas, the project was implemented from 6 January 2020 to 5 January 2022. The project team developed a functional ingredient from turmeric aqueous and ethanolic extracts that demonstrated in vivo anti-inflammatory activity in animal models and in vitro antioxidant potential.

The standardized ingredient is used in the creation of a Turmeric latte product in powder form, which was featured during the 2022 National Science and Technology Week. Using the standardized extracts generated by the project, turmeric products with science-based health benefits can be produced and brought to the market. The product is ready for technology adoption and FDA registration.

Safe Lactic Acid Bacteria (LAB)-based Biofunctional Health-promoting Product as an Adjunct Intervention for the Management of HIV-associated Metabolic Complications

Dr. Marilen P. Balolong
University of the Philippines- Manila

The use of functional foods to reestablish intestinal function may possibly help in managing complications among patients with HIV. To study this, the project aims to develop a Lactic Acid Bacteria (LAB)-based biofunctional health-promoting product and evaluate it as a possible adjunct therapy for the management of HIV patients with metabolic complications.

In 2022, the research team performed cytotoxicity tests against normal cells or tests evaluating the toxicity of the LAB strains to normal cells. Antimicrobial properties of the samples were also studied through agar diffusion assay experiments, specifically for probiotic inhibition properties against gastrointestinal pathogens. Preparation of the functional food product was also initiated.

After the completion of this project, HIV specialists who prescribe adjunctive therapy, HIV patients, patients with metabolic complications, and Filipino researchers who are passionate about functional food research will benefit from its results and output.

Moringa oleifera-based Developed (MOD) Nutraceutical Product: Nutritional and Metabolome Profiling

Dr. Gladys Cherisse J. Completo
University of the Philippines Los Baños

Aiming to increase the competitiveness of Philippine Moringa-based food products, the project probes the production of high-quality standardized Moringa spray-dried leaves as an ingredient.

This year, 23 compounds were presumptively identified in the extracted Moringa samples and metabolomic studies on samples from eight out of 11 sampling sites were also conducted and reported.

The effort is expected to become a catalyst of combined efforts among the agricultural, food production, and health sectors in designing effective interventions for Filipinos using products from Moringa oleifera. This study will also be a significant contribution to address the need for "impactful, and socially and culturally mindful programs and policies" (FNRI, 2019) as a solution to the persistent problem of under- and over- nutrition and its co-morbidities in the Philippines.

The Cocoa-loca Project: Development of functional food products and ingredients from cocoa bean shell waste

Dr. Sheba Mae M. Duque
University of the Philippines Los Baños

Cocoa bean shells (CBS) are often discarded during the chocolate production process. To make use of these waste products, this study will explore the possible functional food products using CBS.

The project aims to utilize the CBS wastes generated during chocolate processing in the production of functional food products and ingredients. Specifically, the project will look into the effects of roasting conditions on the antioxidant properties and fiber contents of CBS wastes, assess the prebiotic potential and functional properties of energy bars enriched with CBS powder, and utilize CBS as a source of antioxidants and dietary fiber for chocolate drink production.

In 2022, currently, the team has obtained data on the antioxidant properties of CBS wastes as affected by different roasting conditions. Moving forward, the study is set to determine the prebiotic potential of the samples and optimize parameters for the extraction of antioxidants and soluble fiber from the CBS.

Isolation and Characterization of Bioactive Peptides from Coconut Fruit

Mr. Saul M. Rojas
Isabela State University

be derived from protein rich foods such as coconut fruit. To further study the benefits of the coconut fruit, Mr. Saul M. Rojas and his team from the Isabela State University conducted research isolating bioactive peptides from coconut meat and evaluating antimicrobial, antioxidant, blood pressure regulating properties.

Following the extraction of proteins from the coconut meat samples, the peptides were purified and tested for bioactivity. The samples exhibited activity against the Bacillus subtilis ATCC 6633, Pseudomonas aeruginosa ATCC 9027, Escherichia coli ATCC 8739, and Salmonella enterica JCM 1651. The samples also showed antioxidant properties.

In addition to its potential health benefits, the potential of the samples as a food preservative agent was also evaluated by meat preservation testing. Results showed that the peptides were able to gradually slow microbial growth in ground meat for more than 10 days.

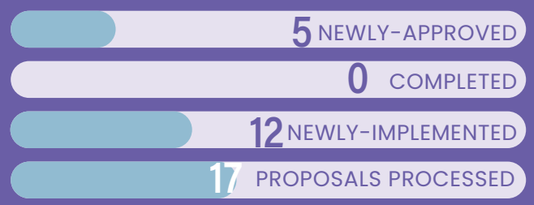
NUTRITION AND FOOD SAFETY

The Nutrition and Food Safety Program seeks to address the human nutrition problems in the country such as micronutrient and macronutrient deficiencies, overnutrition, nutrition related diseases, as well as the current and emerging issues in food safety. The program aims to explore avenues and opportunities using science, technology, and innovation in providing solutions for the improvement of Filipinos' health through proper nutrition and safe food.

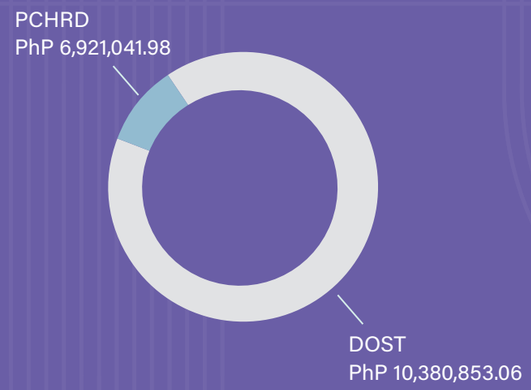
The program was officially launched as one of the new priority program areas under the R&D Management in March 2022 and received a total of 17 proposals during the 2022 Call for Proposals. Possible collaboration with the industry on nutrition research, especially on geriatric nutrition and plant- based diet, was initiated this year.

Integration of nutrition and food safety trends and monitoring of research gaps in nutrition related diseases and food safety issues that have not been well explored will be the focus of the program in 2023, alongside the strengthening of local and international collaborations.

STATUS OF PROJECTS



RESEARCH EXPENDITURES IN 2022



Healthy Aging Program for Pinoy (HAPPY)

Ms. Hazel T. Lat
Food and Nutrition Research Institute, Department of Science and Technology

In the last ten years, the majority of nutrition efforts tend to be directed towards the prevention of non-communicable diseases, school children, pregnant and lactating women, and infants. However, nutrition also plays a significant role in ensuring the overall wellbeing of the elderly.

With four component projects, this program aims to conduct an aging-sensitive fundamental research in nutrition epidemiology and physiology, generate a technology for the development of potential food products utilizing functional ingredients and/or compounds that may be beneficial for the aging population, develop innovative protein food products for the aged, and lastly, determine the effect of FNRI-developed products to selected health and nutrition outcomes of older persons.

In 2022, HAPPY's Project 1 component established a Nutrition and Physiology Laboratory housed at the DOST-FNRI. The facility aims to cater to the needs of researchers as well as academic professionals who wish to conduct aging studies using advanced scientific equipment to measure nutrition-related outcomes such as body composition, basal metabolic rate, and functional status.

The project has also completed its data collection in selected study sites where information on the demographic profile of the elderly, nutrition, quality of life, among others were gathered. Projects 2 and 3 were initiated in September 2022 through which the team will develop innovative food products for the elderly and evaluate its effects on the nutrition and functional status of pre-frail older persons, respectively. Project 4, meanwhile, is set to start once results from Project 2 are obtained.

Characterization of Buffalo Milk Oligosaccharide Supplement (BMOS) Extracted from Buffalo Kesong Puti Whey By-Products and Elucidation of its Growth-Promoting Effects in Stunting Mice Models

Dr. Gladys Cherisse J. Completo
University of the Philippines Los Banos

According to studies, stunting or impaired growth among children is associated with irreversible health problems later in life. Interventions to stunting are often limited to nutrient refeeding, however, this fails to address the deeper cause of the problem.

Recent studies, however, show that oligosaccharides, a type of carbohydrate usually found in plant foods, can improve growth through its potential to improve gut health. This project aims to utilize buffalo (Bubalus Bubalis L) kesong puti whey by-products as a potential source of high-value food supplement and study its growth-promoting effects. The study is the first to use stunted mice models colonized with human microbiota by a stunted Filipino infant fecal donor.

In 2022, the project has completed the profiling of six breeds of buffalo milk in all lactation stages. The macronutrients present in colostrum or the first milk produced during pregnancy and mature milk from six Philippine buffalo breeds were also analyzed. The team also performed the optimization of the extraction methods of the Buffalo Milk Oligosaccharide Supplement (BMOS) and purified oligosaccharides (OS) from whey, as well as the identification and quantification of the compounds present in the BMOS OS.

The team is set to complete the BMOS production by the end of 2022 and conduct the in vivo experiments in 2023. The project is implemented in collaboration with Philippine Carabao Center, Philippine Genome Center, National Institute of Molecular Biology and Biotechnology, and Pascual Pharma Corp.

Assessment of Trans-fat Content in Selected Processed Food

Ms. Rosemarie Dumag
Food and Nutrition Research Institute

Various literature has established that trans fatty acids (TFA) substantially increases people's risk of coronary heart diseases. Other studies have also reported that TFA can increase the risk of Alzheimer's disease and certain cancers, and worsen insulin sensitivity thereby increasing the risk of type 2 diabetes.

To guide consumers, a project led by Ms. Rosemarie Dumag of the DOST-FNRI in collaboration with the World Health Organization (WHO) assessed the trans-fatty acid levels of industry-produced commonly consumed foods.

Currently, the project has already completed the trans-fatty acid analysis of all the samples and the team is currently waiting for the feedback of the WHO regarding the results.

Research Center for Rehabilitation/ Sports Medicine (Oplan ATletang Pinoy)

Dr. Consuelo Gonzalez-Suarez
University of Santo Tomas

The recent success of Filipino athletes in international competitions serves as a testament to the athletic talents of Filipinos. Putting a premium on sports, medicine and research is necessary to further improve their performance by providing our athletes with scientific training.

The Oplan ATletang Pinoy (ATP) Program, led by Dr. Consuelo Gonzalez-Suarez of the University of Santo Tomas aims to establish the Research Center for Rehabilitation/ Sports Medicine which will facilitate research to improve athletic performance.

Oplan ATP aims to develop a wearable sensor that analyzes joint angles and muscle activities, develop a protocol for the preparation of platelet rich plasma which is used by athletes to promote recovery of injuries, and to develop a software application that determine the lateral displacement of the patellar tendon in patellofemoral pain syndrome.

The team studied existing literature on techniques used in performing ultrasounds used by athletes to diagnose injuries, kinematic analysis or the study of the motion of the human body, and EMG activation or measuring muscle response upon stimulation. The project also explored streamlining the process of ultrasound imaging and conceptualized methods to analyze ultrasound images via different image processing techniques. Studies on platelet-rich plasma, its preparation, availability, components, and usefulness were also conducted.

The program is implemented in collaboration with University of Santo Tomas Hospital, Philippine Sports Commission, and Colegio de San Juan de Letran.

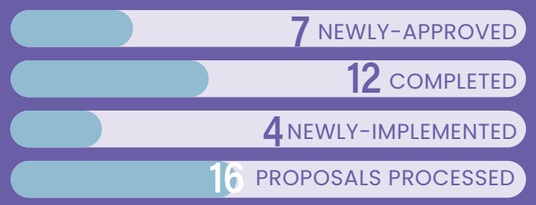
MENTAL HEALTH

With the passing of the Mental Health Act last 2018, the National Mental Health Research Agenda was launched to address the needed mental health research and innovation in the country. Guided by the three outcome-based themes of the Agenda, which are: (1) Improved Mental Health Information System; (2) Strengthened Leadership and Governance; and (3) Accessible, Affordable, Responsive, and Holistic Mental Health Services; the Mental Health R&D Program aims to support research on providing quality, relevant, effective, innovative, and culture and gender inclusive mental health R&D innovations to the country.

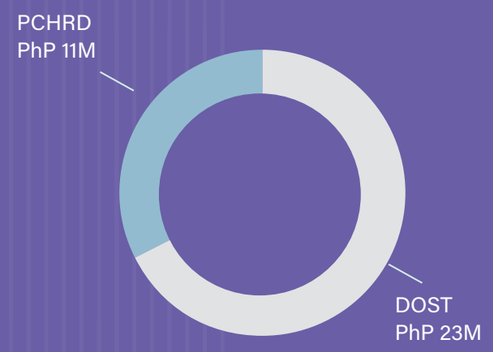
The MH R&D Program will support the following areas in 2023:

- Risk Factors and Treatment/ Therapy of Mental Health Disorders and Psychosocial Problems.
- Inventory of Mental Health Services including Mental Health Literacy
- Information and Communication Technology for Mental Health including Social Determinants of Mental Health related to Technology
- OMICS Technologies Application for Mental Health
- Brain Mapping
- Neurological, Neuropsychiatric, and Neurodevelopmental Conditions

STATUS OF PROJECTS



RESEARCH EXPENDITURES IN 2022



Acceptability of Telepsychiatry among Overseas Filipino Workers in Kuwait

Mr. Gregorio Candelario, Jr.
Southern Philippines Medical Center

Completed in 2022, the project determined the acceptability of telepsychiatry consultation among OFWs in Kuwait Overseas Workers Welfare Administration (OWWA) facility. The project catered to a total of 54 participants, all female with an average age of 35. The most common significant diagnosis was Acute Stress Disorder, followed by Major Depressive Disorder. The results of the questionnaire revealed to be 4.74 out of 5, which means that the participants strongly agree with the positive statements pertaining to the use of telepsychiatry.

The project was awarded 1st Place for the Best Poster Presentation out of 34 entries in the 53rd Asia Pacific Academic Consortium for Public Health Conference in partnership with the University of the Philippines Manila - College of Public Health (host) held on 22 - 23 September 2022 at the Marriott Grand Ballroom, Pasay City, Philippines.

The project plans on expanding its activities to other identified hotspots by the OWWA, such as Saudi Arabia and Hong Kong, and currently looks for collaborators for the sustainability of the project for possible private companies who are willing to employ the displaced OFWs upon their return in the Philippines.

Patterns of Detection and Treatment of Mental and Behavioral Disorders among OFWs

Dr. Veronica E. Ramirez
University of Asia & the Pacific

Most OFW patients experienced panic attacks, schizophrenia, paranoia, anxiety, and extreme fear due to the COVID-19 pandemic. This occurred either in their country of work, while in hotel quarantine during their return to the Philippines, or during their reintegration in their respective communities. Mental health problems have different levels, ranging from temporary behavioral disorders to severe mental disorders. Therefore, the treatment of mental health problems varies in degree of difficulty and distress. Recommended actions should not be "one size fits all."

The project analyzed the patterns of detection and treatment of mental and behavioral disorders among OFWs and derive from the findings the implications to psychosocial support services.

Completed in July 2022, among the recommendations of the project is the development and publication of the Manual on Mental Health Interventions and Psychosocial Support for Filipino Migrant Workers in four languages (English, Tagalog, Bisaya, Ilokano) and in three versions: printed, PDF, and web-based. This will provide information on mental health interventions and psychosocial support for Filipino migrant workers. This will also support the RA 11036 Mental Health Act that will enhance the delivery of integrating mental health services, promoting and protecting the rights of persons utilizing psychiatric, neurologic, and psychosocial health services.

Psychosocial Interventions used by Mental Health Professionals among in-patients of tertiary hospitals referred for psychosocial problems

Dr. Cynthia Leynes
Cardinal Santos Medical Center

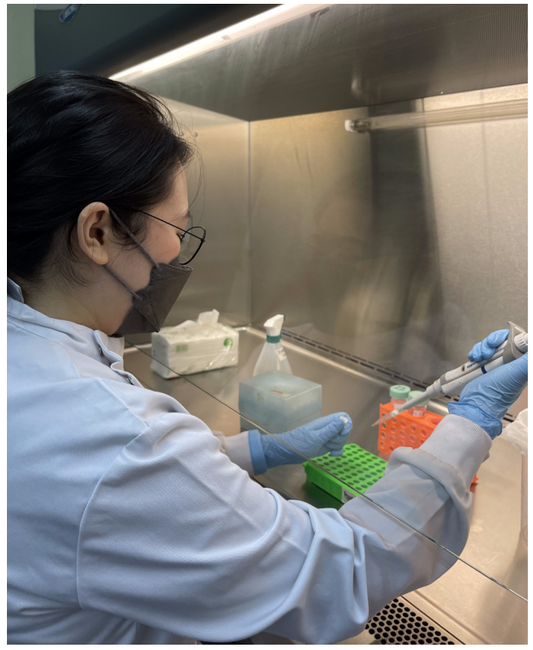
The project aims to describe mental health problems seen among in-patients in tertiary hospitals and the treatment strategies used to manage these problems. The project ended on July 31, 2022.

In July 2022, a face-to-face closing meeting was held to discuss the results of the study. The project completed all data collections in the Chart Review, Surveys, KIIs, and FGDs. The project also published the booklets: "Treatment Recommendations for Psychosocial Interventions for Referred In Patients" and "Mental Health Services for Psychosocial Interventions."

The project's end products will serve as a guideline for the management of psychosocial problems of patients admitted in tertiary hospitals referred for psychosocial problems and will serve as a list of resources in the community that may be utilized for the aftercare of patients admitted to tertiary hospitals referred for psychosocial problems.

Novel Approaches to Treatment of Addiction and Depression (NATAD) using Animal Models

Dr. Rohani Cena-Navarro
University of the Philippines Manila



The program is one of the first research endeavors in the Philippines focused on the neuroscience of drug addiction, specifically with volatile inhalants such as toluene. With two components, the program aims to test novel pharmacological and behavioral treatments for overcoming toluene withdrawal and craving in a rodent model and assess the pharmacokinetic and pharmacodynamic interactions of selected psychobiotics and antidepressant drugs in the depression-like rat model.

In 2022, the team developed a rat model of adolescent toluene addiction and withdrawal that mirrors inhalant use in the Philippines and will assess the effects of toluene withdrawal and craving on rats' memory, anxiety, and social interaction. The project will essentially support rehabilitation research and policies to address the toluene addiction of adolescents in the country. Project 2 of the NATAD Program was approved for funding on 31 January 2022. Led by Mr. Bryan Paul I. Bulatao, this project aims to determine and compare the antidepressant effect of selected psychobiotics and antidepressant drugs in their combinations in rat models, which is obtaining information about a disease and its prevention, diagnosis, and treatment using an animal.

Fully Automated Conversational Agents (Chatbots) for Enhancing Public Mental Health

Dr. Ronald Del Castillo

This project aims to develop and test the effectiveness of fully automated conversational agents or chatbots in promoting mental well-being and reducing psychological distress. In 2022, the project team conducted the initial development of the DarS mobile app prototype including the wireframe, infrastructure, design and development, and started working on the improvement of its usability and acceptability for testing.

Roundtable Discussions on Spirituality and Mental Health Research in the Philippines

Spirituality is a recent dimension in the already existing biopsychosocial framework. This topic, however, is not part of the recent National Mental Health Research Agenda (NMHRA) hence part of the goal of this activity was to identify which aspects of religiosity and spirituality would be particularly relevant to mental health research in the Philippines and also to incorporate spirituality and mental health in the NMHRA.

Three roundtable discussions (RTDs) were held — the first was with persons of faith, the second was with professionals (psychologists, psychiatrists, sociologists, health practitioners, academe), and the last was an RTD with researchers and members of the academe. Data from the RTDs were synthesized, and the results were presented in a public forum.

A Public Forum: Spirituality in the Philippine Mental Health Research and Practice

Researchers, practitioners, mental health care providers, and representatives of religious groups attended the Spirituality in the Philippine Mental Health Research and Practice public forum led by the Department of Science and Technology - Philippine Council for Health Research and Development (DOST-PCHRD) on December 14, 2022 at the Philippine International Convention Center, Pasay City.

The goal of the gathering is to communicate the results of the roundtable discussions (RTDs) conducted in 2021, with various leaders of faith-based groups and researchers who discussed spirituality as part of research, therapy and recovery of people with mental conditions. The RTDs also aim to know the spiritual methods that can help prevent these conditions.

The series of RTDs were part of the DOST-PCHRD's support to the Philippine Council for Mental Health (PCMH) goal of introducing the biopsychosocial spiritual framework that provided a scientific perspective in adding spirituality to the new dimension of Mental Health.

The forum also presented research topics related to spirituality that will be included in the National Mental Health Research Agenda (NMHRA), with hopes that the study under this will help improve policies and improve health care services in the Philippines, as well as around the world.

Among the resource speakers who gave technical presentations on the subject were Dr. Michael Tan, Professor Emeritus in Anthropology at the University of the Philippines – Diliman; Sister Mary John Mananzan, Vice President for External Affairs at St. Scholastica's College; Dr. Ma. Lourdes "Honey" Carandang, Clinical Psychologist and Founder of the Mindfulness, Love, and Compassion Institute for Psychosocial Services, Inc.; and Dr. Allan Bernardo, a Distinguished University Professor at De La Salle University – Manila.

Also present in the gathering were members of PCHRD MH-RAG who are also experts in the field of mental health, along with Professor Emeritus Dr. Lourdes Ignacio, Dr. Arsenio Alianan Jr., and Dr. Carl Abelardo Antonio.

In conclusion, Dr. Ignacio encouraged mental health researchers to submit proposals in line with the NMHRA to help develop evidence-based ideas and further grow the mental health R&D program in the country.

Seventy-six people attended the gathering at PICC, while more than three hundred attended the live broadcast on Zoom, and almost 1,700 watched the Facebook livestream.

Mental Health Research Manual Capacity Building

On 28 October 2022, the Council, in cooperation with the Mental Health Research Advisory Group and Technical Working Group conducted the capacity building webinar on Mental Health Research entitled, "GABAY: MH Research Philippines: Guidelines And Building Quality Mental Health Research in the Philippines."

The webinar, with the aim of disseminating the National Mental Health Research Agenda 2019 - 2022 (NMHRA) and imparting to the proponents the skills and knowledge needed to develop a significant and high-quality research proposal in preparation for future call for proposals, was attended virtually by a total of 95 participants from all over the country. Participants were provided copies of the Mental Health Research Manual and the NMHRA.

S&T Features

In celebration of Mental Health week, the Mental Health R&D Program was featured as the pilot episode for the S&T Features last 25 October 2022 entitled, "Mental Health is our Agenda." The S&T Features is an online show which aims to promote the S&T Fellows Program of the DOST by showcasing the accomplishments and in volvements of the S&T Fellows in their respective DOST agencies.

Through this episode, S&T Fellow Dr. Sarah Jane Jimenez, together with the Program Head Mr. Jules Celebrado, and Mental Health Research Advisory Group member Dr. Arsenio Alianan Jr. shared to the public why mental health research is vital to the improvement of the mental health situation in the country. The team also showcased the various mental health research projects being supported by PCHRD, and its current and future impact on society.

The said program aims to engage the services of highly qualified researchers, scientists, and engineers in various DOST R&D Institutes and Councils to increase and strengthen the human resource complement of the Department's R&D group.

DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION IN HEALTH

The Disaster Risk Reduction and Climate Change Adaptation in Health (DRR-CCAH) Program aims to develop technologies that address and/or prevent health effects from disasters and climate change leading towards a more resilient Philippines. It also focuses on the reduction of health risks and consequences of health emergencies which is fundamentally vital in attaining health security and building the resilience of communities, country, and health systems.

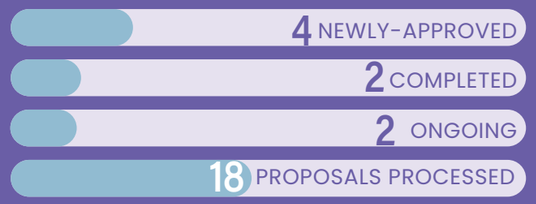
This program is essential in safeguarding development and implementation of concrete actions ensuring the development gains enumerated in the Sendai Framework to which the Philippines, a nation highly vulnerable to natural disasters and climatic hazards, is one of the signatory countries.

Scientific and technological activities and innovations in the DRR-CCA in Health Program are part of the priorities of the government with the aim to address the following gaps:

- Identification and characterization of climate-sensitive and/or climate-related diseases;
- Food security and nutrition during disasters especially for the vulnerable populations; and
- S&T based innovations in building resilient health systems during disasters

For the year 2023, the DRR-CCAH R&D Program expects some ongoing projects to be completed and four projects to commence. Further, the program expects to receive more proposals aligned with its priorities since there will be a series of caravan, and stakeholder engagements to be conducted.

STATUS OF PROJECTS



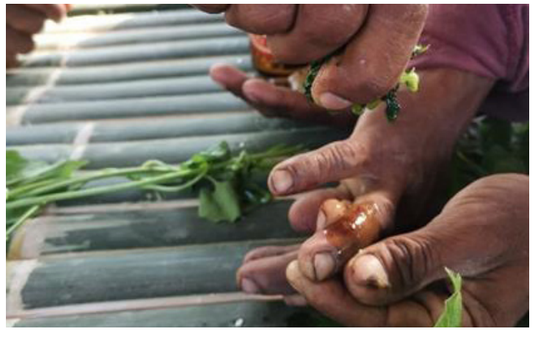
RESEARCH EXPENDITURES IN 2022

Php 7,297,587.75 (PCHRD)

The Aytas of Mt. Pinatubo as Models for Climate Change Resilience

Professor Leonardo Estacio Jr.
Addictus Research and Intervention Center Inc.








The Aytas of Mt. Pinatubo as Models for Climate Change Resilience

Professor Leonardo Estacio Jr.
Addictus Research and Intervention Center Inc.

It has been observed that indigenous knowledge systems and practices (IKSPs) allow indigenous people (IP) during disasters to survive and bounce back with minimal or even without additional humanitarian aid - thanks to their time-tested and effective collective knowledge and practices.

This study aimed to document and assess the IKSPs on climate change resilience of the Ayta Mag-Antsi of Porac (Pampanga) and Ayta Sambal of Botolan (Zambales), and, thereafter, produce IKSP-based technologies in disaster risk reduction and health emergencies.

The study completed its implementation on 02 November 2022. Its major accomplishments include the following:

- Thirty-four researchers composed of 26 community-based researchers from four Ayta communities and eight researchers from Addictus Research and Intervention Center Inc. were trained.
- Documented substantively eight IKSPs on climate change resilience that the Ayta peoples possessed such as natural early warning systems on climate change, building an emergency shelter from nature, ready-to-pick natural foods (edible flora and fauna), storing rainwater and making fire to fight cold and to cook food, herbal plants and medicines, sustainable agroforestry, enhancing social cohesion and social support system, ritual practices, and worldviews on health emergencies and disaster-related behaviors, among others.

Based on the data gathered, the research team finalized the IKSP-based technologies and guides applicable on health emergencies and disaster risk reduction and management. In addition, two policy briefs related to recognizing, protecting, and strengthening the IKSPs on climate change adaptation of the IPs and on developing and promoting IKSP-based technologies and guides for climate change adaptation are being prepared for dissemination to policymakers and program developers.

Determining Provincial Health Risk to Climate and Disasters in the Philippines

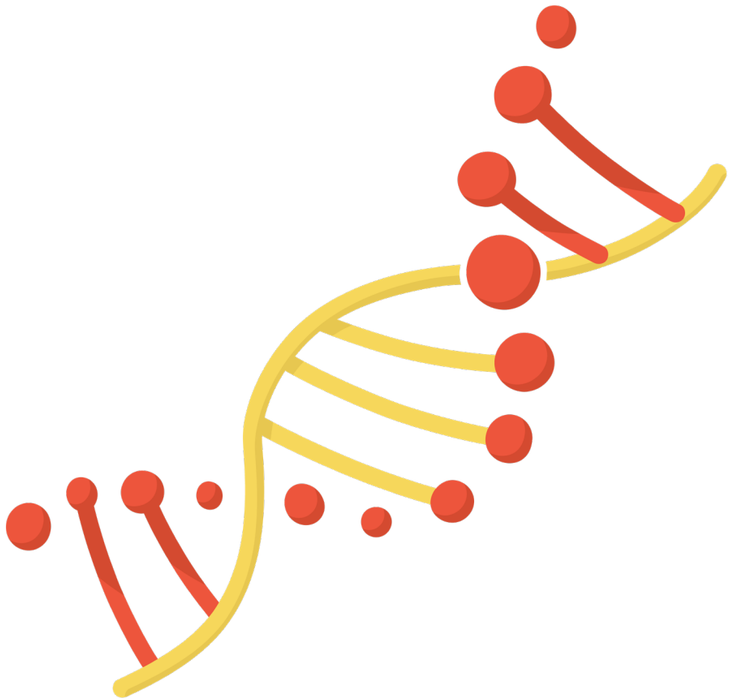
Dr. John Q. Wong
EpiMetrics

Extreme weather conditions have a significant impact on health, especially for infectious diseases in vulnerable populations, and are dependent on the baseline pathogens available in the community. Other vulnerabilities, such as comorbidities, chronic disease, or demographics are heightened when climate change is present. This research developed and visualized climate and disaster health risk of nine Philippine provinces and all cities and one municipality of the National Capital Region (NCR).

Completed in July 2022, the study identified climate-sensitive diseases, which are among the 48 most burdensome diseases in the Philippines. A total of 15 articles showed quality evidence of climate sensitivity of the 14 diseases. Analysis and modeling assessed the relationships among 2009-2019 monthly municipal data on climate (temperature, rainfall, humidity, wind speed) and health outcomes, and hotspots of each disease were identified across the provinces.

Results also suggested that long-term climatic changes have bigger effects on health than transient or seasonal changes. This study found out that some of the most severe diseases in the Philippines are impacted by temperature, humidity, rainfall, wind speed, and vegetation. Results of this study provide a baseline for the relationship between climate change and health in the Philippines that can be used to guide local policies and initiatives, as well as the country's Climate Change Adaptation in Health (CCAH) plan. The shortlisted diseases also provide a research agenda for climate-sensitive diseases forecasting for the most burdensome diseases.

OMIC
TECHNOLOGIES FOR HEALTH



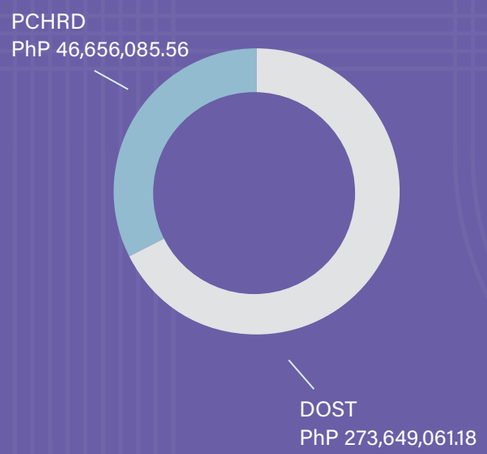
The OMIC Technologies for Health Program aims to utilize 'OMIC' technology platforms in generating meaningful information as inputs into the development of personalized/ precision medicines, diagnostics, therapeutics, other technologies, and as support to health and clinical practice guidelines and policies of the Philippines.

The program recognizes that studying the Filipino Genome will reveal a wealth of information which can lead to the development of better ways and technologies in disease diagnosis, management, treatment, and prevention. The knowledge that will be gained from looking into the genes and extending these to different biomolecules (RNA, proteins, lipids, carbohydrates, etc.) of the Filipino can ultimately lead into the development of better, more personalized medicines and therapies for optimum, individualized treatment tailored for the Filipinos.

STATUS OF PROJECTS

- 17 NEWLY-APPROVED
- 4 COMPLETED
- 25 NEWLY-IMPLEMENTED
- 25 PROPOSALS PROCESSED

RESEARCH EXPENDITURES IN 2022



Cancer-related Research

Philippine Health Statistics in 2009 reported cancer as the third leading cause of mortality. After a decade, statistics show that cancer cases continue to increase in which it became the second leading cause of mortality in the country.

LUNG CANCER

Clinical Proteomics for Cancer Initiative (CPCI): A Proteomics-Based Discovery of Non-Small Cell Lung Cancer Biomarkers and Drug Targets in the Philippines

Dr. Herdee Gloriane C. Luna
Lung Center of the Philippines

In the Philippines, lung cancer is the major cause of mortality accounting for 17.2% of cancer- related deaths. Non-small cell lung carcinoma (NSCLC) is the most commonly diagnosed form of lung cancer, accounting for approximately 80% of the disease. The high incidence and mortality rates of lung cancer, in addition to its remarkable resistance to common treatment strategies emphasize the need to better understand the biology of cancer and to identify clinically relevant biomarkers that can either be used for early diagnosis, predict treatment response, determine the possible course of the disease, or to serve as novel targets for therapies.

This program aims to discover biomarkers and drug targets for Lung Cancer and acquire TKI resistance, specifically for NSCLC in Filipino patients, through proteomic analysis - a part of the clinical proteomics field which deals with the quantitative measurement of multiple proteins in a biological sample that is related to human disease.

In 2022, the program continuously assembled clinical samples for proteomic studies on NSCLC. The project also completed enrollment of patients for the Metastatic Arm of the study (discovery of protein biomarkers for TKI Resistance) while enrollment for the surgical arm (discovery of protein biomarkers for NSCLC) is ongoing. Also, the program actively conducts specimen collection, laboratory procedures for the characterization of patients, histological and molecular analysis of patient specimens, as well as TKI resistance monitoring and follow-up. Data and samples from Project 1 are continuously being shared/ transferred with/to component Projects 2 and 3 for processing, proteomics analysis and confirmatory analyses. The project leaders under these program are

- Dr. Eloise I. Prieto-Vasquez - National Institute of Molecular Biology and Biotechnology, UP Diliman
- Dr. Baby Rorielyn T. Dimayacyac-Esleta - Institute of Chemistry, UP Diliman

BREAST CANCER

Gene Expression Profiling of Breast Cancer Among Filipinos and Development of Breast Cancer Mammosphere Assay Toward Individualized Cancer Management

Dr. Rodney B. Dofitas
Philippine General Hospital – UP Manila
Dr. Michael C. Velarde - Institute of Biology, UP Diliman

Breast cancer is one of the most common cancers affecting women worldwide. In Asia, the Philippines is reported to have the highest incidence of this disease, with an age-standardized rate of 47.7 per 100,000 per year. Despite these concerning numbers, little is known about the biology of breast cancer. In order to shed light on and help in the management of this disease, this program explores approaches to cancer characterization and diagnosis geared toward individualized cancer management.

In 2022, the program performed an initial dry-run for optimization of core needle biopsy and mastectomy, transportation of specimens, and optimized the process flow and execution of biospecimen processing. The program also started redesigning the Biobank database and website to further operate in an ideal set-up. A partnership was also formalized with AVATAMED, a Precision Medicine company in Singapore which enables the project to exchange facilities, researchers, and students, in addition to sharing of relevant information, materials, and other industry-academia activities.

Currently, the program is set to identify possible gene expression profiles that can be used as predictive markers in Filipinos with locoregionally-advanced breast cancer. It is expected that by 2023, the program will have initiated the development of a Tumor Profiling Test Kit and 3D Cell Culture Breast Cancer Chemotherapy Testing Panel for an individualized therapy and precision medicine for greater survival.

LIVER CANCER

Early CANcer Detection in the LivEr of Filipinos with Chronic Hepatitis B Using AI-Driven Detection System (CANDLE Study)

Dr. Beatrice J. Tiangco
University of the Philippines Manila

Around 7 to 10 million Filipinos are Hepatitis B positive and are at high risk of developing cirrhosis of the liver. If not monitored closely, this eventually leads to liver cancer, which can still be cured in its early stages through removal of tumors, but becomes incurable if caught at a later stage.

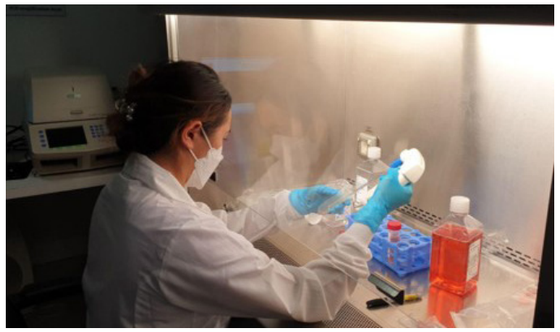
The CANDLE Study Program aims to improve the healthcare system concerning liver cancer by establishing a clinical and genomic profile of the Filipino population for early detection of liver cancer, and developing an Artificial Intelligence-driven (or AI-driven) detection system for the early diagnosis of liver cancer among chronic hepatitis B cases.

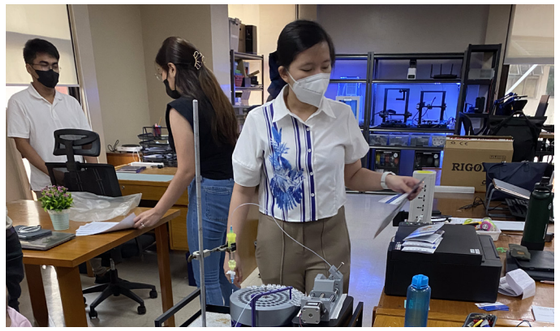
In 2022, the project recruited most of its target 800 patients through the efforts of partner hospitals across Luzon, Visayas, and Mindanao. As analysis of genomic data is performed, the project hopes to identify at least ten genetic variations contributing to liver cancer diagnosis and prognosis.

Now, in its final year, the project will produce a clinically useful scoring system for liver cancer diagnosis which can help clinicians decide on how often diagnostic tests should be done, thus maximizing use of the limited funds of patients while maintaining good clinical practice. Dr. Ranzivelle Marianne Roxas-Villanueva -of the University of the Philippines Los Baños is also a project leader under this program.

Establishing the Integrated Protein Research and Development Center (IPRDC): A Biotechnology Facility for Health

Dr. Crisanto M. Lopez, Dr. Arni E. Gambe-Gilbuena, Ms. Danielle B. Lapinig, and Dr. Ricardo Jose S. Guerrero
Ateneo de Manila University

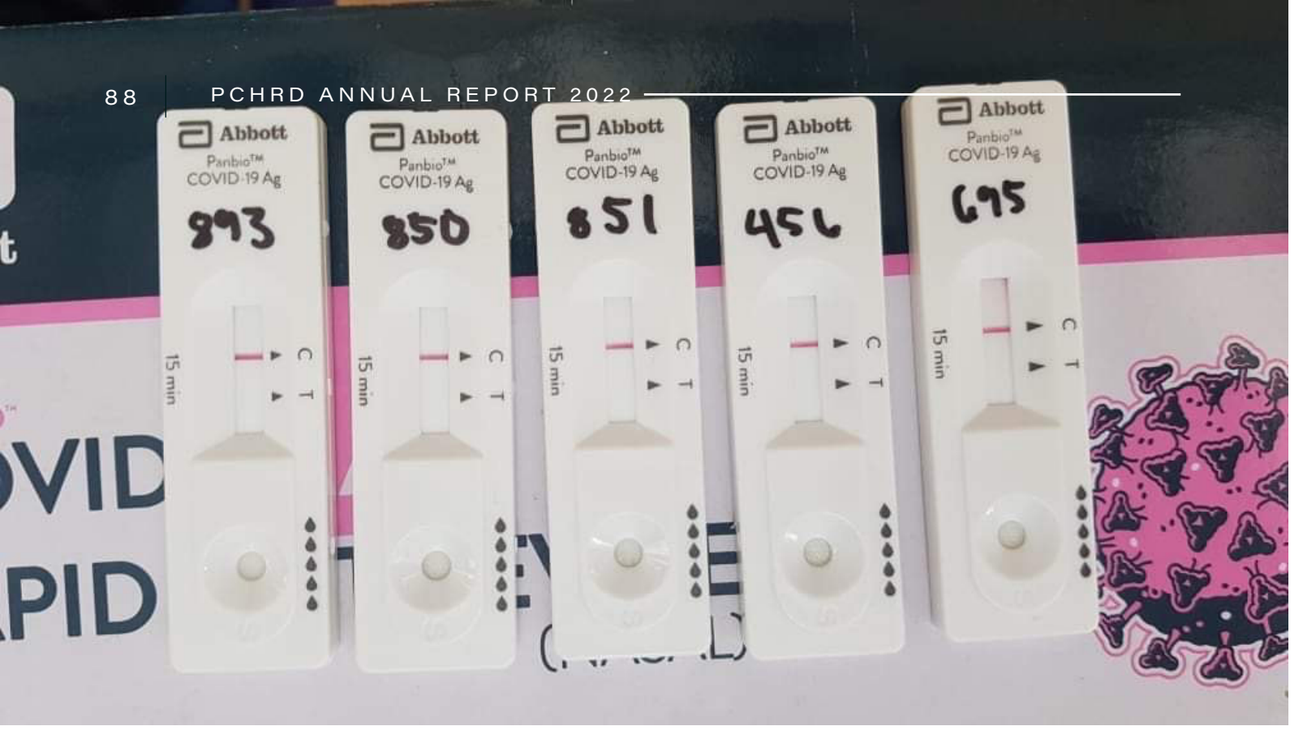




The program aims to be a Center for Integrated Protein Research and Development that can potentially offer lower priced reagents with comparable functional performance to commercial kits and reagent components. With this, components available locally decrease associated logistical costs and allow more responsive production based on demand. This can also decrease reliance on bulk purchasing and storage of inventory. This prevents spoilage as laboratories would only buy what they need at more affordable prices. Local production of these core proteins also give the Philippines the ability to develop technology to address emerging variants and pathogens.

In 2022, the program accomplished most of its targets for Year 1. Project 1 completed the majority of its activities related to the establishment of the center's capability to produce enzymes used in RT-qPCR and RT-LAMP based diagnostics at a laboratory scale and demonstration of the functional viability of enzymes/proteins produced in-house at small scale compared to commercial proteins. On the other hand, majority of Project 2 and 3's activities are ongoing, which are geared towards demonstrating industrial-scale production of recombinant proteins using *E.coli*-based expression systems and on the development of hardware compatible with the protocols developed.

The project built a prototype of the open-source versions of a bioreactor and a fast protein liquid chromatography (FPLC) system geared to improve the production capacity of the IPRDC program. Activities to improve these prototypes are also ongoing.



Vaccine Immune Response and Outcome Monitoring with Epitope Sequences (VIROMES): Application to Philippine WHO SOLIDARITY COVID-19 Vaccine Trial

Dr. Salvador Eugenio Caoili
University of the Philippines Manila

The WHO Solidarity Trial Vaccines is a large international, double-blind, placebo-controlled, randomized clinical trial that aims to coordinate the prompt, efficient, and reliable evaluation of candidate COVID-19 vaccines under development. The workflow will yield blood derivatives (i.e., serum and plasma) that contain antibodies, which can be examined to detect antibodies that recognize SARS-CoV-2 epitopes and other relevant antigens that may be present in the candidate vaccines. Such analyses could reveal differences in epitope recognition profiles between the vaccinated and unvaccinated, as well as participants receiving different vaccines in the trial. Moreover, the products of RT-PCR testing from COVID-19-confirmed symptomatic cases provide specimens for sequencing of SARS-CoV-2 which allows better characterization of antibody responses among study participants with breakthrough infection.

The project is a ride-on study of the WHO STV, and it aims to design and use synthetic peptide-based antigenic constructs (SPACs) for immunochemical analysis and to characterize antibody responses, including breakthrough infections, among trial participants. The study will also look into the complement system and T-cell responses of participants who develop symptoms, in an effort to better understand the mechanisms and circumstances underlying the ineffectiveness of vaccination against SARS-CoV-2 infection.

In 2022, a total of 125 people gave their consent, and 882 samples were collected for the study. Additionally, peptide sequences for the immunoassay have been produced. It is anticipated that participant recruitment, laboratory work, and data processing will continue until the third quarter of 2023.

The information gained from the study will help guide efforts for the effective development and distribution of COVID-19 vaccines, particularly for the Filipino community. Additionally, this study would help build up local capacity to better handle the ongoing threat posed by emerging and re-emerging infectious diseases.

Expanded Capability Building in R&D in Genomics: Establishment of Genomics Consortia and Core Facilities in Mindanao and Visayas

Dr. Cynthia P. Saloma, PGC Main
Dr. Victor Emmanuel Ferriols, PGC Visayas
Dr. Joel Hassan G. Tolentino, PGC Mindanao

Genomics has been at the core of generating and translating useful information into actionable results. The establishment of the PGC, hosted in UP and supported by DOST & CHED through research grants, is a government investment that provides learnings, success stories, and tangible outcomes towards increasing the capacity of the country on Genomics research, ultimately for the benefit of the Filipinos. In 2018, PGC embarked on expanding its genomic sequencing capacity in the various regions of the country through the setting up of the PGC Visayas Satellite Facility (https://pgc.upv.edu.ph/) and the PGC Mindanao Satellite Facility (https://pgc.upmin.edu.ph/), which was accomplished through this program with funding from the DOST.

In light of the COVID-19 Pandemic, the Philippine Genome Center has also been in the forefront of COVID 19 testing, Genomic surveillance, and research augmentation in the country. On March 11, 2022, the University of the Philippines (UP), through its Philippine Genome Centers (PGCs) in UP Visayas and in UP Mindanao, announced that it is now capable of sequencing the genome of SARS-CoV-2 from community samples in both island groups, which was made possible through the joint efforts of UP, the DOST, the Department of Health (DOH), and the Department of Budget and Management (DBM). The announcement was done through an official launching event hosted via zoom by the Philippine Genome Center in coordination with the Department of Health - Epidemiology Bureau and PCHRD. In November 2022, PGC Visayas also launched its Bioinformatics Facility, which can now cater to the bioinformatics needs of researchers in the Visayas.

By the end of its implementation, it is expected that the network, facilities, expertise and other output produced by the program will continue to be utilized by the Philippine Genome Center for Filipino researchers and towards enhancing the country's capabilities for OMIC research in various fields.

Philippine Program for Diagnostic Biomarkers, Disease Modeling and Nutraceutical Product Development (PhilDIAMOND):

Initial Focus on HIV-related Neurocognitive and Metabolic Complications

Dr. Marissa M. Alejandria
University of the Philippines Manila

The Philippines, in recent years, is experiencing one of the fastest-growing HIV epidemics in the world. With the provision of the now more accessible antiretroviral therapy (ART) to HIV-positive patients, HIV can now be considered a manageable disease and patients can now live a near-normal lifespan. However, ART cannot fully eradicate the virus in various sites (i.e., brain, bone marrow, lymph nodes, and gut), which leads to a continuous cycle of inflammation and failure of the immune system.

Project 1 proposes an innovation for molecular mechanistic research in HIV immunology through investigating the role of the immune dysfunction markers in the development of HIV complications in our country.

In 2022, Project 1 established a fully-functioning Flow Cytometry Core Laboratory in UP Manila that will be utilized by other researchers, as well as other DOST-funded programs such as the UP Manila MORPH Program and IMMUNE Program. With the continuous support of DOST-PCHRD to MD-PhD scholars in the UP College of Medicine, this project also provides an avenue for them to join this project as fulfillment of the partial requirement for their research course work.

Meanwhile, Project 2 aims to help improve the efforts of personalized medicine in the country. Through collaborations with partner institutions, the project envisions strengthening the disease-modeling research capacity of the Philippines.

Project 2 completed the establishment and development of Mammalian Cell Culture Laboratory-Stem Cell In Vitro Applications in Research and Modeling (MCCL-SCIARM) in UP Diliman. A satellite disease modeling laboratory is being developed at the Mindanao State University - Iligan Institute of Technology (MSU-IIT) in Iligan City. The project team also conducted various inter-program training and workshops on flow cytometry, disease modeling, cell culture, and natural product extraction. The project also completed the training of personnel for induced pluripotent stem cells (iPSCs) generation at Cambridge, United Kingdom hosted by StemCell Technologies.

Project 3 will develop a probiotic-based nutraceutical product for potential adjunct therapy of HIV-related complications.

Ultimately, the findings can provide possible recommendations for the standard of care for people living with HIV which could be made in terms of screening for neurocognitive impairment, as well as monitoring of immune dysfunction levels. The project leaders under the program areDr. Ahmad Reza F. Mazahery - of the Institute of Biology, UP Diliman, Dr. Marilen P. Balolong of UP Manila, and Dr. Leslie Michelle M. Dalmacio also from UP Manila.

Projects under Newton Agham Cycle 2

Newton Agham

ZOOTRIP: Zoonotic Transmission of Intestinal Parasites

Dr. Vachel Gay Paller
University of the Philippines Los Banos

In the Philippines, intestinal worm infection—remains highly prevalent, especially in rural and poor urban communities. The infection spreads through contact with water bodies contaminated with the worm larvae emerging from snail hosts. This shows that the environment and animals play a significant role in the spread of intestinal helminths to humans. However, the contribution of zoonotic transmission to the overall burden of human intestinal worm infection and the relative importance of different animal and environmental reservoirs remains poorly understood.

This project is an interdisciplinary study that combines human, animal, and environmental elements with molecular diagnostics, genomics, and mathematical modeling to look into and assess the dynamics of helminth infection transmission in the Philippines as well as to identify effective and sustainable parasite control and elimination strategies in endemic areas.

In 2022, the team was able to complete the fieldwork in Caraga and compile the list of parasites recovered in the region. Household surveys, key informant interviews (KII), and risk assessments were conducted in order to determine and understand the burden of disease associated with zoonotic parasites in the human population and the measures identified to reduce the burden. The genome sequencing from helminth-positive samples collected during field sampling was done by the UK partner, University of Surrey. In terms of capacity building, the group held a number of training sessions for nurses and medical technologists on how to correctly identify parasites found in human feces. There were also training seminars on molecular methods, bioinformatics, and socio-economic analysis for the enumerators, research assistants, and students.

This project will benefit stakeholders, particularly in poor and marginalized communities, will increase their awareness of intestinal helminths, and provide a better road-to-health for such activated communities. The project findings will also enable the development of novel control strategies, leading to increased effectiveness and sustainability of intestinal worm control in the Philippines, and ultimately to improvements in health in endemic areas. The assessment of socio-economic impacts of intestinal helminths in humans, animals, and the environment will provide crucial evidence for policy makers and funders.

Cellular Immunity and Resistance to Schistosomiasis in the Philippines (CRISTAL Project)

Dr. Mario Antonio L. Jiz II
Research Institute of Tropical Medicine

Schistosomiasis currently infects over 200 million people worldwide. Notably, the infection caused by the Philippine strain of *S. japonicum (SjP),* one of the five blood fluke species causing the disease, does not exhibit a similar pattern of a distinct age-peak at adolescence as seen with other strains. The prevalence of SjP remains high even in older populations and amongst males.

No previous studies have investigated the role of Tfh and Tfr cells in schistosomiasis and the new information gained from this study will be of importance to combat this disease in the Philippines.

The CRISTAL project has completed its three study visits to Palo, Leyte, its enrollment of participants, sample collection, reinfection assessment, upgraded equipment and trained staff in both the RITM and its satellite laboratory in Palo, Leyte. Despite the ongoing pandemic, the project had an average of 95% sample submission compliance from its participants, these samples are currently being shipped to their collaborators in London School of Hygiene and Tropical Medicine for analysis.

The project also developed a heat map of the *Schistosoma japonicum* hotspots in Brgy. Macanip, Jaro, Leyte using the stool screening data from the study. In addition, the project had presentations in the Newton Agham Virtual Grants Gallery of the British Embassy Manila, DOH SCEP Schistosomiasis Stakeholders Forum, and RITM 40th Anniversary Research Forum. The results of this project are envisioned to provide a better understanding of the immune response and will inform the future development of vaccines.

Using Genomics to Improve Diagnostics for Tuberculosis in the Philippines (THPR Project)

Dr. Mari Rose A. De Los Reyes
Research Institute of Tropical Medicine

With the advancement of molecular techniques, rapid molecular tests have recently become available for the diagnosis of TB. Among these is Xpert, however, it relies on sputum samples which is generally a challenge for some populations who have difficulty or cannot produce it. This project will develop transcriptomic signatures of TB patients into a risk score protocol that could be utilized clinically to identify active TB and evaluate treatment response in reducing active TB.

The THPR project has completed its training for the healthcare workers of the RITM and already exceeded the overall enrollment number for Category I - Adult (33/30), MDR (31/30), and non-TB patients (51/50). Among the culture isolates, 32 have been found to be drug resistant in which 20 have multidrug resistance, four have extensive drug resistance, six have mono-resistance, and two have poly-resistance. The project had been able to establish partnerships with the Philippine Children's Medical Center and Philippine Children's Hospital and had been able to develop an online dashboard to easily monitor the status of patient enrollment and recruitment, as well as the current number of MTB isolates and blood samples.

The project was also able to upgrade and provide equipment to the National Tuberculosis Reference Laboratory and Molecular Biology Laboratory of the RITM. In addition, the project recently had a poster presentation in the Newton Agham Virtual Grants Gallery of the British Embassy Manila. The results of this project are expected to be of benefit to the field of diagnostic and genomic research of MTB not only in the country, but globally.

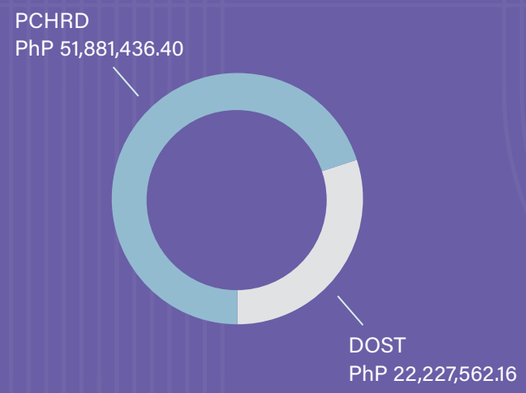
DIAGNOSTICS

Under the Diagnostics Program, the DOST-PCHRD invests in the development of rapid, cost-effective, and minimally invasive diagnostic kits/ devices/ tools/ tests for early detection and monitoring of communicable, non-communicable, and neglected tropical diseases in the Philippines. The program also credits the utilization of current and/ or novel technologies to improve and/ or validate existing diagnostic kits, tests, and devices.

STATUS OF PROJECTS

- 9 NEWLY-APPROVED
- 19 COMPLETED
- 22 NEWLY-IMPLEMENTED
- 14 PROPOSALS PROCESSED

RESEARCH EXPENDITURES IN 2022



Detection Tools for Helminthic Neglected Tropical Diseases (NTDs)

of Mutual Public Health Importance in the Philippines and China

Dr. Ian Kendrich C. Fontanilla
University of the Philippines - Diliman

Tropical countries like the Philippines are among those at risk for helminthic diseases or diseases caused by parasitic worms such as hookworms. In collaboration with the Tongji University in China, Dr. Ian Kendrich Fontanilla of the University of the Philippines Diliman (UPD) works to develop robust detection tools that can be used to complement the monitoring and surveillance system for priority helminthic neglected tropical diseases (NTDs) in the Philippines and China. The project focuses on schistosomiasis and food-borne helminthiases, in particular taeniasis and anisakiasis.

Through this collaboration, China is developing diagnostic tools for humans and animals, while the Philippines takes charge in developing detection assays for environment and food products. The resulting tools developed from this collaboration will address the need for more accurate and sensitive diagnostics that can detect the presence of parasites in different life stages. The established testing technology will be applied to the product export base through quarantine standard procedures, and play a significant monitoring role in food safety.

As of August 2022, the Philippine project team completed animal and environmental sampling in Agusan del Sur and Cagayan Valley. The team collected animal (carabao) stool samples, water samples, and soil samples from actual and potential snail sites. The project is expected to end by May 2023.

Paper-Based Diagnostic Kit for HIV Drug Resistance Detection

Using Recombinase Polymerase Amplification

Mr. Angelo D.V. dela Tonga, MSc
National Institutes of Health,
University of the Philippines Manila

HIV continues to pose significant health risks to public health. Aside from the lack of definitive cure, the increasing number of patients becoming resistant to available antiretroviral drugs is also a challenge for effective disease management.

To help address this challenge, Mr. Angelo dela Tonga of the National Institutes of Health - University of the Philippines Manila leads the development of a paper-based diagnostic device that will detect HIV drug resistance mutations. The project team aims to develop a tool that will not require complex infrastructure for easier deployment.

To date, the team was able to determine the device's specificity, characteristics (i.e. limit of detection, flow rate, optimum concentration of detector molecules), repeatability, stability when kept at 4°C and 37°C, and use of clinical samples for the assays.

The project is now in its third and final year of implementation.

SinoPhil CHARRME: China-Philippines Cooperation for Harnessing and Accelerating Research and Resources on Microvesicles and Exosomes

Dr. Jonel P. Saludes
University of San Agustin

Extracellular vesicles (EVs) secretion by cells is a natural mechanism for intercellular communication, which includes pathological processes. This process also plays a role in facilitating disease progression or immune system modulation.

Leveraging the technology for the detection of autoimmune diseases, this project will develop a probe chip that will harness the technology of curvature and lipid-sensing. The project also aims to create a comprehensive genomic or proteomic profile of diseases using minimally-invasive tools as well as the manufacturing of the diagnostic microchip tools using Filipino-developed technology for the isolation of extracellular vesicles (EVs).

As of November 2022, the project accomplished the design of mutant peptides, accomplished the EV pull down assay, fabricated the microfluidic chip, and secured samples from SLE patients for the determination of lipid composition, and assemble and test the chip for identification of microvesicles and exosomes.

Mr. Angelo dela Tonga of the National Institutes of Health - University of the Philippines Manila leads the development of a paper-based diagnostic device that will detect HIV drug resistance mutations. The project team aims to develop a tool that will not require complex infrastructure for easier deployment. To date, the team was able to determine the device's specificity, characteristics (i.e. limit of detection, flow rate, optimum concentration of detector molecules), repeatability, stability when kept at 4°C and 37°C, and use of clinical samples for the assays. The project is now in its third and final year of implementation.

Biomaterials for Diagnostics and Therapeutics Research and Development Center

Dr. Reynaldo DL. Bundalian, Jr.
Angeles University Foundation

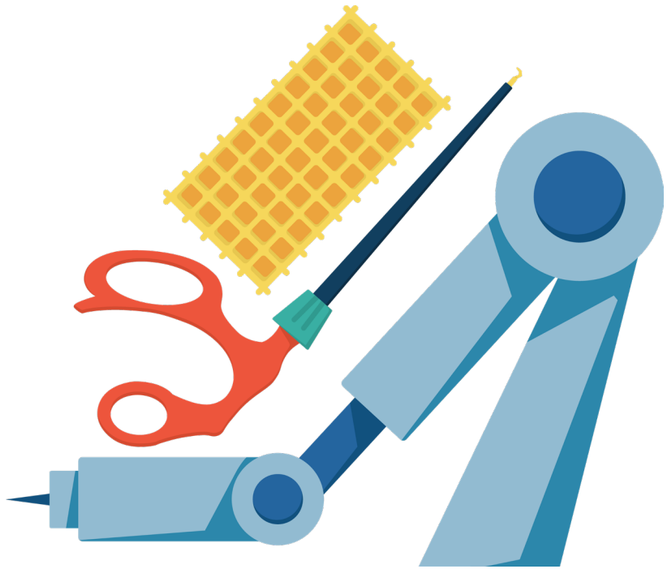
The DOST and PCHRD work with the Angeles University Foundation for the establishment of a Biomaterials for Diagnostics and Therapeutics Research and Development Center. Funded under the DOST's Science for Change Program (S4CP), the project is part of the Department's thrust in nurturing and encouraging research and development efforts in the regions.

Led by Dr. Reynaldo Bundalian, Jr., the center will focus on the development and integration of biomaterials and nanomaterials for health applications. It also aims to be a contributor of point-of-care device (POCT) technologies that can be used for the differential diagnosis of priority diseases. Furthermore, the R&D center aims to develop nanomaterials for integration as carriers and solid support for immunogen in vaccine preparations for different diseases.

The program is composed of three component projects, namely:
Development of a POCT Device for Rotavirus (Viral Gastroenteritis) Detection
Fecal Lactoferrin, Myeloperoxidase, and Calprotectin as Differential Markers of Pediatric Acute Gastroenteritis: A Preliminary Investigation
Synthesis of Biocompatible Nanomaterial Conjugated Rabies Peptide Immunogen

To date, the project team performed anti-rotavirus antibody production, recruited participants, and synthesized polymer samples.

BIOMEDICAL DEVICES ENGINEERING FOR HEALTH

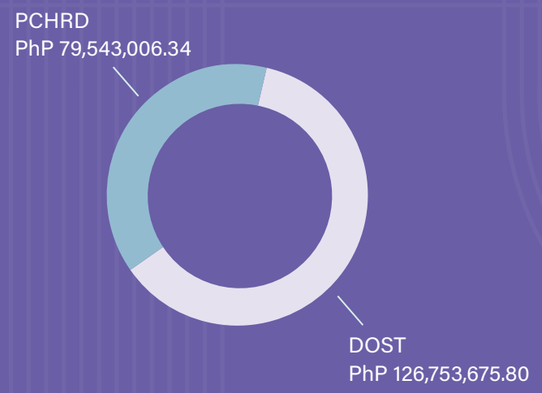


The Council recognizes the need for locally-made, affordable, safe, and reliable hospital and biomedical devices that comply with existing regulatory and industry standards. Through the Biomedical Devices Engineering for Health Program, the Council aims to:

- develop accessible, affordable, good-quality, and innovative biomedical devices and technologies that consider sustainability of materials, manufacturing processes, and products;
- develop skills and expertise in biomedical engineering and related areas, and;
- contribute to establishing and strengthening support systems towards a Philippine Biomedical Devices Industry

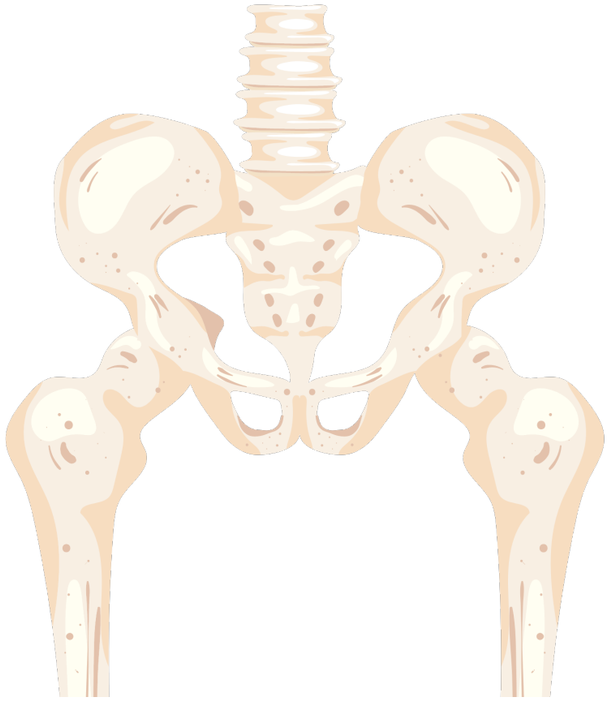
STATUS OF PROJECTS

RESEARCH EXPENDITURES IN 2022



Cementless Hip Replacement System

Dr. Ramon B. Gustilo
Orthopaedics International Inc.



In the Philippines, it is estimated that more than 170,000 patients need to undergo total hip arthroplasty (THA) annually. While the procedure may be done using cement or cementless hip systems, studies show that cementless hips perform better in younger patients.

However, cementless implants are estimated to be twice as expensive compared to cemented ones. To make this procedure more accessible for Filipinos, Dr. Ramon Gustilo of the Orthopedic International Inc. aims to locally manufacture cementless THA that will comply with international standards. Aside from quality and cost, the project team will also look at various innovations including a modular extension stem and a cup positioning system that will allow more orthopedic surgeons to perform the procedure in different parts of the country.

During the first year of project implementation, the research team completed the design and initial risk management.

Development of a Magnetic Distal Targeting Device for Intramedullary Nails

Engr. Jude Sasing
Orthopaedic International Inc.

Intramedullary nailing is a process used for treatment of long bone fractures. This process includes distal locking, which requires the use of c-arms x-rays. C-arms x-rays, however, are not widely accessible in Philippine hospitals.

Relative to this, Engr. Jude Sasing of the Orthopaedics International, Inc. (OII) leads a project that aims to develop a magnetic distal targeting device for intramedullary nails that will not require an x-ray. The development of the device will enable Filipino surgeons to perform intramedullary nailing on patients easily, accurately, and at an affordable cost.

The project team developed two design options. The first option is a distal targeting device that can be used with existing nails from the OII. This uses a tubular permanent magnet and a three-axis magnetometer. The magnet is attached to the tip of the distal drill sleeve so that its axis is collinear with the axis of the drill bit or trocar pin. The second design is a distal targeting device that can be used for different brands of nails. It uses three-dimensional (3D) magnetic tracking of position and orientation. The basic components of the device are an electromagnet assembly composed of two coaxial but non-coincident electromagnets, and a three-axis magnetometer.

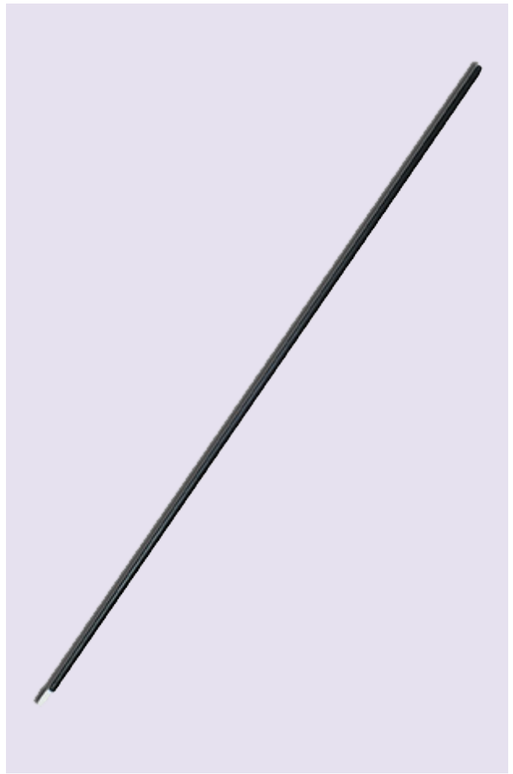
Energized Reusable Laparoscopic Blunt Dissector

Dr. Deogracias Alberto G. Reyes
Sacred Heart Hospital of Malolos, Inc.

In minimally invasive surgery, the operation consists of a variety of techniques that cause less damage than open surgery, giving patients less complications. One of the first types used is laparoscopy. Laparoscopy is done with one or more small incisions by using small tubes, tiny cameras and surgical instruments. This kind of operation usually requires remarkable time and may cause muscle pains for the surgeons.

To make this procedure easier for surgeons, the project aims to design an energized reusable laparoscopic blunt dissector (ERLBD), which will reduce the operating time and consumables used during the procedure. The use of the ERLBD is envisioned to lead to safer, more affordable, and ergonomic surgeries.

During the first year of project implementation, the team completed the training among personnel who will conduct the experiments and activities for the project. The design and fabrication is also completed, which produced targeted 5 mm and 3.5 mm prototypes. Benchtop trials for the energized and non-energized blunt dissector were performed using the customized jig for the prototypes to standardize the placement and control the amount of force being transmitted by an instrument. Statistical consultation recommendation was also done by performing 10 trials for each instrument for the benchtop experiments. The team also performed the Bland-Atlman test and T- test on data analysis. Safety protocols were also established after performing animal trials with the prototype. Thermal damage was accessed by collecting gallbladder tissue for laboratory analysis. Patent consultation with lawyers is currently ongoing.



POWer: Mobile Biomedical Device Unit to Enhance Access to Prosthesis and Orthosis Devices

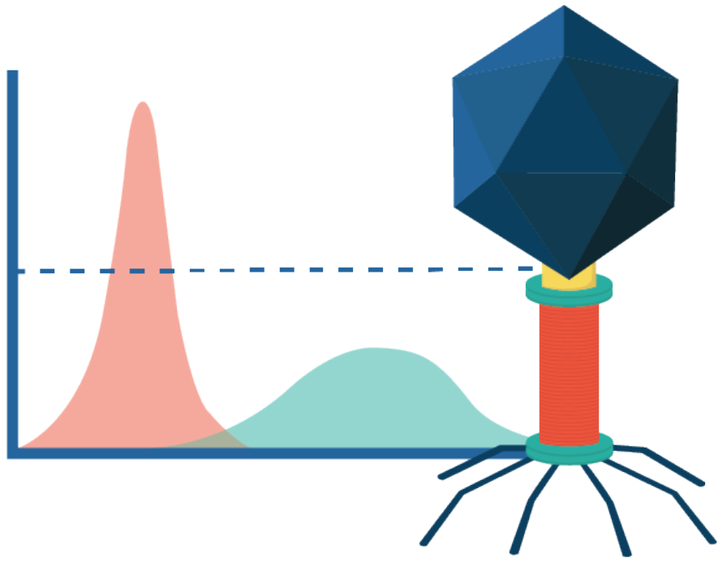
Dr. Josephine Bundoc
Physicians for Peace Philippines

Led by Dr. Josephine Bundoc of the Physicians for Peace Philippines, the project aims to enhance access to quality assistive biomedical devices for persons with mobility impairments, especially to low-resource LGUs. The project team utilizes a mobile assistive device workshop to develop prosthesis and orthosis devices that are comparable with those developed in a facility-based workshop and at par with existing standards. The project assesses prosthetic/orthotic outcomes among patients provided with these devices in the following parameters: fabrication and maintenance time, adjustment and repair incidence, and patient satisfaction.

Currently, Physicians for Peace Philippines has an operational mobile workshop for assistive devices through the support of various donors. The mobile workshop was developed to enhance access to biomedical prosthesis and orthosis devices in areas without a facility-based workshop.

The team is set to evaluate the quality of the devices manufactured in the mobile workshop and conduct a cost-effectiveness analysis.

RE-EMERGING AND EMERGING DISEASES

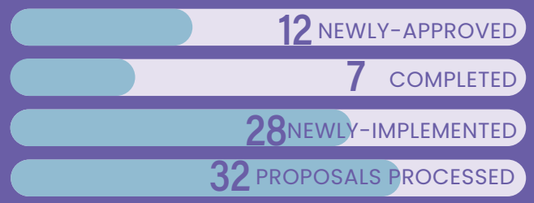


The Re-emerging and Emerging Diseases (RED) Program of PCHRD envisions to utilize research on the development of local and novel technology platforms, therapeutics, preventive measures, surveillance, control and management protocols against re-emerging and emerging diseases, for the benefit of the Filipino people, especially those marginalized and impoverished.

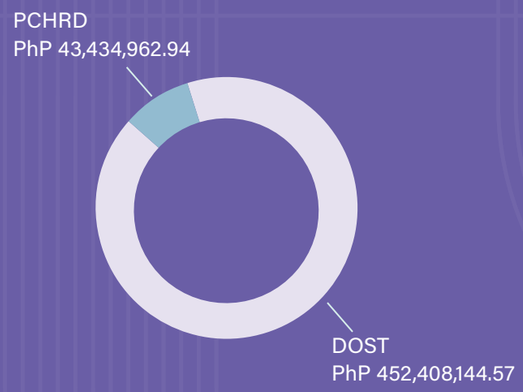
The RED Program is an expansion of the Dengue and Other Arboviruses (DOA) Program and was created in 2021. This year, the RED program was able to support studies which fortifies and allows new collaborations with different institutions both in the private and public sector, serving as a start in addressing the gaps in health research.

Some of its major accomplishments in 2022 are the commencement of Inter-Regional Network through One Health Approach to Combat AMR program consisting of eight (8) different HEIs from Luzon, Visayas and Mindanao, the approval of additional three (3) projects under the Virology and Vaccine Institute of the Philippines (VIP) program, and twelve (12) new HNRDA projects to be implemented for the next few years. These projects include patient support system, dengue studies, oral vaccine for COVID 19, vector borne studies and antimicrobial resistance. This brings forth opportunities towards attaining the program's goal that is to utilize research for the benefit of the Filipino people. In 2023, the RED program expects to fund projects that address re-emerging and emerging communicable diseases, antimicrobial resistance (AMR), and preventive interventions against re-emerging and emerging diseases.

STATUS OF PROJECTS



RESEARCH EXPENDITURES IN 2022



Dengue-related research in the Philippines

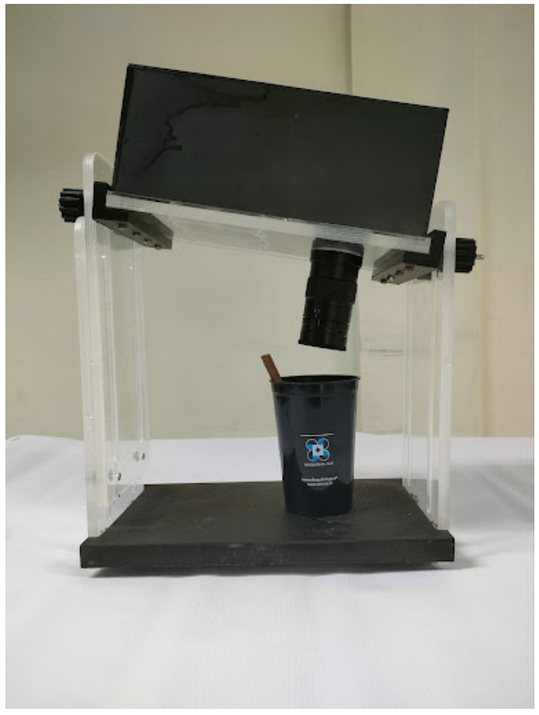
Seasonal Arboviruses of *Aedes albopictus* in Highland and Lowland Sites of Cebu City

Dr. Frances Edillo
University of San Carlos (USC)

Various vector control methods combined with health-control interventions have helped reduce dengue burden. However, with the effects of climate change, new prevention and control efforts are needed to counter the potential consequences of climate change on the geographic range and mosquito-borne arboviral incidence.

This study examined the presence of dengue virus serotypes (DENVs) in *Ae. albopictus* or Asian tiger mosquito collected from six highland and lowland sites of Cebu City, Philippines. Through bi-monthly collection of eggs, larvae, and pupae, during the dry and wet seasons, DENV detection was done through RT-PCR of pooled RNAs of adult *Ae. albopictus*.

In 2022, the study found that DENVs in *Ae. albopictus* varied between seasons. DENV-2 and DENV-4 differed seasonally between sites of varying altitudes. Similarly, during the wet season, the mosquito harbored more DENV-1 in lowland sites and DENV-3 in highland sites. Meanwhile, during the dry season, the mosquito played an important role in DENV maintenance between altitudes. From the results of the study, the team recommended extending services of dengue vector surveillance in the highlands aside from efforts implemented in the lowlands, and installing water pipelines in the rural highlands to minimize the practice of water storage in artificial containers that serve as breeding sites of this species.



IoT-Based OL Trap and Community Dengue Early Warning System (C-DEWS) for Cauayan City, Isabela

Dr. Betchie Aguinaldo
Isabela State University

In 2022, the Department of Health (DOH) recorded a 182% rise in cases of dengue, hitting over 200,000 cases from January 1 to December 17, 2022, compared to the over 78,000 cases in 2021 during the same period.

Contributing to dengue mitigation efforts, Dr. Betchie Aguinaldo of the Isabela State University undertakes a research study aiming to enhance the existing ovicidal larvicidal traps by digitizing and automating the recording of dengue larvae, while recording the installed OLtraps in designated locations in Cauayan City to compute the index in real-time.

The project team developed an IoT OL trap working prototype by integrating a smart camera to capture and count the mosquito eggs captured by these traps and has already started a soft field deployment to gather mosquito eggs in Isabela. The prototype's images are processed by the algorithm designed by the project team to count the mosquito eggs.

In the setups, the project team has successfully installed antennas in barangays identified for the rollout, to allow the CDEWS IoTs to transmit the data gathered from these traps to the database developed that would allow the front-end users to count and compare the dengue cases in Isabela to the egg counts, counted by the IoT OLtrap.

Currently, the project team is applying for a utility model for both the device and the algorithm. The project team published a paper, regarding the algorithm they have developed that would allow the IoT OL trap to count the captured mosquito eggs.

Center for Vector of Diseases of Public Health Importance in the Philippines for Region IV (CVDPHIL, Region IV)

Dr. Divina M. Amalin
De La Salle University (DLSU)

Along with the rising dengue cases across the country, the growing resistance of mosquitos against insecticides stresses the need for more efforts towards managing the spread of dengue. The Center for Vector of Diseases of Public Health Importance in the Philippines for Region IV (CVDPHIL, Region IV) is a program implemented by the De La Salle University (DLSU) that contributes to this goal.

The program carries three main goals: 1) establish the susceptibility of Aedes mosquitoes against mosquitocidal, 2) develop a bio-mosquitocidal using B. asiatica and Bacillus spp., and 3) develop biological control strategies for mosquito vectors, Aedes spp. using natural organisms.

Led by Dr. Divina M. Amalin, the team conducted field collections of mosquito eggs using ovitraps across Region IV-A which will serve as samples for the establishment of the quality reference for the susceptible and resistant mosquito population, specifically of Aedes aegypti and Aedes albopictus. Once a good amount of samples are obtained, the eggs would be reared and undergo insecticide resistance bioassays.

To date, 209 ovitraps were deployed across Laguna, Rizal, and Cavite. The team explores methods of blood-feeding the hatched mosquitoes, in preparation for the mass rearing of the mosquitoes.

The development of the bio-mosquitocidals was also initiated which confirmed the potential of B. asiatica and Bacillus spp. as sources of mosquitocidal formulations. Crude extracts of B. asiatica will be further assayed to compute important lethal concentration values by Year 2. This will be followed by the identification of specific bioactive compounds present in the extracts.

On the other hand, biosurfactants from Bacillus spp. (after confirmation of their biosurfactant production) will be extracted, purified, and characterized. Different assays will be performed in order to assess the effects of these two formulations on the different growth stages of mosquitoes (i.e., as larvicides, pupicides or adulticides).

Vaccine mix-and-match

A Study Evaluating the Safety and Immunogenicity of Mixing Different COVID-19 Vaccines and Vaccine Platforms in Filipino Adults

Dr. Michelle Joy B. De Vera
Philippine Society of Allergy, Asthma and Immunology

To mainly address the COVID-19 vaccine supply shortages in the Philippines, this study aims to demonstrate the interchanging/mixing administration of available COVID-19 vaccines in the country, particularly the safety and immunogenicity of completing the vaccination series with available COVID-19 vaccines in the Philippines in those given Sinovac as the first dose.

As of May 2022, the study completed participant recruitment and vaccination schedules in all five trial sites. First interim analysis showed that heterologous or mixed vaccine schedules are non-inferior to homologous vaccine schedules with no evidence of non-beneficial effects noted in the analysis.

Aside from this, mixed vaccine schedules resulted in significantly larger neutralizing antibody responses than homologous vaccine schedules. The team observed a trend towards higher proportions of local and systemic reactions among mixed vaccine schedules compared to homologous vaccine schedules, however, this trend is not statistically significant on the most part; and, no serious adverse events or suspected unexpected serious adverse reactions attributable to the vaccines were reported.

Predicting jaundice among infants in the first 24 hours of life

Dr. Maria Esterlita V. Uy
Philippine Society of Newborn Medicine

Jaundice is the most common cause of morbidity during the neonatal period of infants based on the annual census of the PGH. The disease is caused by the concentration of bilirubin in the blood, which is a yellow pigment made during the breakdown of red blood cells. It is also the most common cause of readmission of newborn infants.
Aiming to contribute methods to predict the occurrence of jaundice among infants, this project determined the predictive value of an infant's bilirubin levels within the 24th hour of life (24th HOL) in developing jaundice. The study screened infants on the 24th HOL using the Bilistick system, a point-of-care hand-held device which requires only one drop of blood by heel prick. An infant is considered to be of high risk for hyperbilirubinemia with a bilirubin level of greater than or equal to 17 milligrams per decilitre (mg/dL).

In 2022, the project established a predictive value of the 24 HOL bilirubin in the development of significant hyperbilirubinemia at the 72nd HOL. A bilirubin level greater than or equal to 7.5 mg/dL at 24 HOL is the optimum cut-off value for predicting hyperbilirubinemia. This has an overall diagnostic accuracy of 72.89%, sensitivity of 67.96%, and specificity of 73.27%. By the end of the project, the team aims to develop and adapt a bilirubin screening program for different hospitals nationwide; expand the screening to local health centers and rural health units; and, develop a bilirubin nomogram among late preterm infants in the Philippines.

The Philippine COPD Profile and Survival Study (CPASS)

Dr. Tim Trinidad
Philippine College of Physicians

Chronic obstructive pulmonary disease (COPD) is a preventable and treatable disease characterized by airflow limitation that is not fully reversible. It is primarily known to damage lung tissues in varying severity.

Recognizing the risks of COPD, this five-year project aims to identify the profile and distribution of COPD phenotypes among Filipino patients. The project outputs will provide the necessary information, disease trends, and statistics aimed to increase the understanding of physicians about the local phenotypic distribution of COPD and its survival pattern, which is the key to adequate clinical response in terms of prognostication of the disease and long-term care planning.

As of 2022, the project accomplished recruitment of targeted 2,075 participants for the spirometry testing. Other activities of the project were also done, despite the expected difficulties in patient follow up and data collection.

Data from the project may be used by policymakers as a guide in the allocation of common respiratory drugs in primary care centers, appropriation of budgetary requirements for prevention, or as a basis in case-rate packages for the Philippine Health Insurance Corporation.

Guitar Lessons for Restoring Hand Function Among Patients with Unilateral Hand Impairment from Chronic Stroke (G.T.A.R.A.)

Prof. Nathan Neil Manimtim
University of the Philippines- College of Music

The use of research-based music intervention in the field of medicine is gaining ground in many countries such as in the United States. In the Philippines, music therapy is not currently an established field but its principles may be applied in the practice of physical and occupational therapy to potentially attain its reported benefits, which include improving client participation as well as easing the discomfort and difficulty associated with the exercises.

Exploring the potential of research-based music intervention in the Philippine setting, a project by Prof. Nathan Neil Manimtim of the University of the Philippines-College of Music aims to test the use of classical guitar playing as an alternative treatment in the restoration of hand function among patients with unilateral hand impairments.

Professor Manimtim's team designed a set of guitar exercises that can achieve hand function rehabilitation effects similar to exercises currently used in traditional occupational therapy sessions for patients with one impaired hand and one normally functioning hand. As of December, two (2) patients completed the experimental treatment program and are awaiting post-treatment evaluation, while four (4) are currently undergoing the experimental treatment program. Outputs of the project may serve as reference and encourage further studies on research-based music intervention for other medical conditions in the Philippines.

Prospective Urban and Rural Epidemiologic (PURE) Study

Dr. Antonio Dans
University of the Philippines-Manila

The World Health Organization (WHO) identifies cardiovascular diseases (CVDs) as the leading cause of death worldwide, and responsible for a third of deaths in the Philippines.

To generate data on the risk factors for CVDs specific to Filipinos, Dr. Antonio Dans of the University of the Philippines-Manila, in collaboration with Population Health Research Institute (PHRI), is on the 9th year implementation of the Prospective Urban and Rural Epidemiologic (PURE) Study.

With the data from PURE, a cardiovascular risk calculator will be developed that is specific for Filipinos, or if appropriate, an international calculator that incorporates traditional risk factors as well as emerging risk factors. The PURE study attempts to develop the technology necessary to truly define the cardiovascular risk of individuals and populations. The final product will go beyond the geographic limits of the Framingham heart study, a study that identified high blood pressure and high cholesterol as common factors that contribute to the risk of acquiring CVDs. The PURE Study will include non-traditional non-biomedical factors such as stress, place of residence, race, socio-economic status and more. It has also expanded and launched a PURE COVID sub-study which has started conducting surveys and collection of blood samples for data gathering.

A total of 5,024 participants were enrolled in the study. These participants will be followed up every 3 years (3Y, 6Y, 9Y) in 3 PURE sites (Urban – Tondo, Rural – Quezon province, HSES – Cainta, Rizal). Currently, the project team has an ongoing follow-up of activities across all sites. Data collection through community and house to house visits were done to all scheduled participants including blood extraction, ECG and spirometry.

Initial results showed that lower income countries are at higher risk for CVDs due to limited access to primary prevention, secondary prevention, and lower educational attainment which affects the health seeking behaviors of the population. The study also pointed out the high intake of refined carbohydrates as a factor contributing to the risk of CVD. Data generated by PURE will provide knowledge and novel discoveries on the possible causes of higher risk for CVDs. It may guide policies and encourage efforts towards preventative measures, especially for high-risk individuals.

Association of COVID-19 Infection and Disease Outcomes among Hospitalized Patients in Metro Manila

Dr. Terrence Regala
TOP UP Training Center and Research Consultancy Inc.

With the increase in the prevalence of cardiovascular diseases among COVID-19 patient, this DOST-PCHRD supported project aimed to determine the moderating role of cardiovascular outcomes on the association of COVID-19 infection and disease outcomes among hospitalized Filipino patients. The project was conducted in selected tertiary hospitals in Metro Manila, Philippines.

In the study, a total of 763 eligible medical records of hospitalized adult Filipino patients who had RT-PCR tests from March 2020 - 2022 were reviewed. Data showed that patients confirmed with COVID-19 infections had higher likelihood of developing negative disease outcomes, particularly those with severe to critical infection. Cardiovascular outcomes had higher incidence rates among COVID-19 patients and increased the odds of negative disease outcomes significantly.

By the end of the study, the project team was able to determine that cardiovascular outcomes, particular ST-elevation myocardial infarction, CVD disease infarct or cerebrovascular disease, pulmonary embolism and atrial fibrillation were significant moderators of the association between COVID-19 infection and poorer disease outcomes. With this, the study could serve as a guide for clinicians in which they should be vigilant in monitoring, preventing, and managing these cardiovascular complications among COVID-19 positive patients by using prognosticating tools and scoring systems and by implementing institutional-based clinical pathways or algorithms to ultimately improve patient status

Virology and Vaccine Institute of the Philippines (VIP) Program

Dr. Annabelle V. Briones
Industrial Technology Development Institute (ITDI)

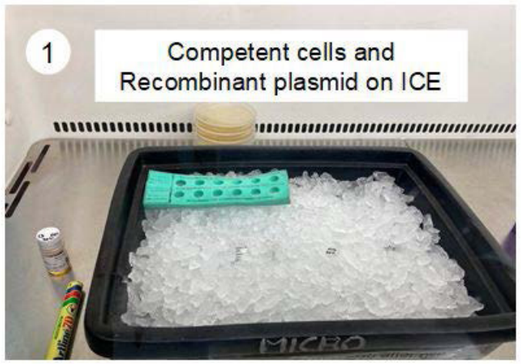
The emergence of SARS-CoV-2, a novel strain of the coronavirus, in 2020 highlighted the need for R&D capacities in virology research. Having a pool of highly-trained virology experts and appropriate facilities could have enabled local researchers to conduct studies on the virus as quickly as possible and guided authorities in implementing evidence-informed response strategies. In response to this, the DOST initiated the establishment of the Virology and Vaccine Institute of the Philippines (VIP). The VIP is envisioned to be the country's premiere research and development institution that will undertake studies on novel, emerging and re-emerging viruses affecting not only humans but animals and plants as well.

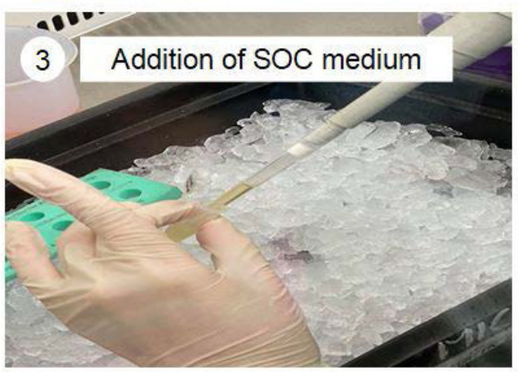
DOST has initiated several R&D projects through the Industrial Technology Development Institute (ITDI) as the program lead of the VIP, and the DOST-PCHRD being the studies' monitoring agency.

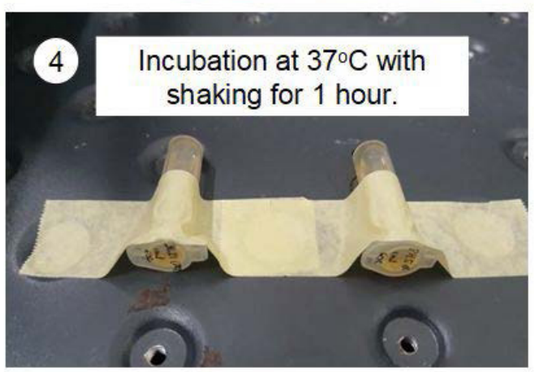
To date, the VIP Project 7 which focuses on the development of a COVID-19 vaccine from antigenic peptide virus-like particles (VLPs) has completed the selection of antigenic peptides, the identification of SARS-CoV-2 immunogenic peptides, characterization of VLP samples by mass protein separation, and VLP characterization by electron microscopy, and SARS-COV-2 peptides were identified using VLP-serum antibody binding by Direct ELISA from sera of patients with history of SARS-CoV-2 infection.

In Project 8 focusing on the development of COVID-19 antibody test kits using enzyme immunoassay, the project team is already validating the developed ELISA kit for the detection of COVID-19 antibodies.

The target beneficiaries of the VIP program are public health professionals, policy planners, and the community which can use results of the studies in general, in better understanding viruses of clinical, agricultural, industrial, and environmental importance. In particular, the following projects are being implemented in partnership with several local and international researchers and institutions.







Testbeds for Low-Cost Ventilation System in Tropical Regions for Risk Reduction of Infectious Aerosol and Virus Transmission

Dr. Edward Querikiol
University of San Carlos - Talamban Campus

The COVID-19 pandemic emphasized the importance of proper ventilation in preventing the spread of aerosol and virus transmission. In response to this need, the University of San Carlos, Cebu, in close collaboration with Max Planck Institute of Chemistry (MPIC) in Mainz, Germany, is implementing a project that aims to develop and demonstrate the effectiveness of a low-cost ventilator system for tropical indoor environments to curb the further spread of airborne viruses.

The team developed a working prototype of the ventilation system which will aid in the transition to the new normal and will be beneficial for indoor environments, such as classrooms, business offices, public transport vehicles, and small manufacturing facilities, among others.

In 2022, the ventilation system was also tested for its effectiveness with real students during face to face classes, and was assessed if the ventilation system will not cause any degree of discomfort among its users. The current prototype utilizes readily-available materials such as PET bottles, cable ties, duct tape, and glue to enable easy deployment. Approximately, one unit of the prototype ventilation system is projected to cost Php 5,000, of which the cost is expected to significantly go down after negotiation with suppliers and manufacturing partners.

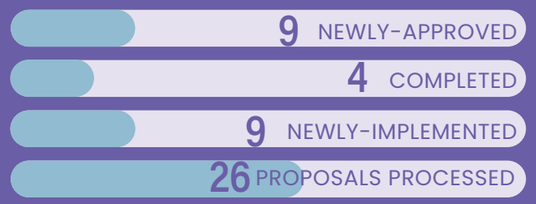
DIGITAL AND FRONTIER TECHNOLOGIES FOR HEALTH

The Digital Health and Frontier Technologies (DFTH) aims to address the need for an efficient, equitable, and affordable healthcare system and patient management through evidenced-based policy making and innovative healthcare interventions via research and development of tools utilizing artificial intelligence and new fields of information and communication technologies in digital health.

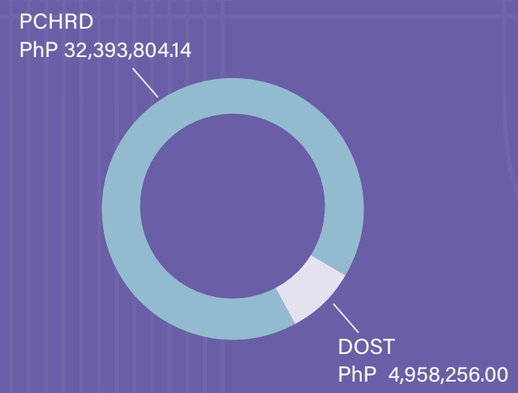
In 2022, the program monitored the completion of four (4) projects: 1) Rapid Assessment of Health Information Systems towards Pandemic Resiliency and UHC in Two Provinces ended on March 31, 2022, and 2) RabCast: Proof-of-concept for a Forecasting Tool for Rabies Spread in Davao City Through Combined Genomic and Mathematical Approaches ended last August 31, 2022, and 3) Immersive Technology for Health Research Programs. Meanwhile, 26 DFTH proposals were received during the Call for Proposals.

In the next year, the program is expected to process proposals including the following: 1) Artificial intelligence in developing screening and diagnostic software, for enhanced efficiency of healthcare service delivery, and for information dissemination; and 2) Big data analytics (or health data analytics) to influence evidence-based decision-making, or policy translation for targeted health intervention, with targeted registries as an output, and for information dissemination purposes.

STATUS OF PROJECTS



RESEARCH EXPENDITURES IN 2022



RabCast: Forecasting Rabies Spread in Davao City

Dr. May Anne E. Mata
University of the Philippines Mindanao

Through combined genomic and mathematical approaches, the RabCast project established a predictive tool in the form of an online dashboard to assess the spatial spread of rabies in Davao City. Novel data from this study identified that the Talomo and Tugbok districts are significant hotspots of canine rabies in the city.

Distribution maps also showed that interventions are randomly distributed across the districts as predicted. Mapping of new viruses with previously sequenced baseline samples revealed the emergence of new-sub lineages possibly diverged from undetected, unidentified, older variants; and spread analysis presented significant transmission routes between Davao City and its neighboring provinces in Davao City, Philippines. In addition, both epidemiological and simulation models showed that despite small, there still exists a significant impact from cats on the dynamics of rabies transmission in Davao City and that should not be ignored given that cats were the second most populous domestic animal in the city.

Assessments further showed the limiting effect of COVID-19 on rabies spread during the pandemic. The development of the RabCast dashboard in the next phases of the program will provide a powerful strategy for rabies control as it will allow the local government to strategize a proactive rabies control program by identifying high-risk areas in advance and targeting them for intensive campaigns.

The project accommodated three undergraduate students who worked on their thesis, one undergraduate student was hired as an intern, and twelve City Veterinarian's Office (CVO) collaborators trained under the supervision of the RabCast project.

On October 2022, the study published a journal while six more journals are expected to be published within the first quarter of 2023. Moreover, four members of the team presented the papers at the 53rd Asia-Pacific Academic Consortium for Public Health Conference 2022, held at the Marriott Hotel Manila in Pasay City, Philippines, on September 22–23, 2022. The study entitled "Optimal Control Theory Applied to a Rabies Epidemiological Model with Time-Dependent Vaccination in Davao City, Philippines" won first place for virtual abstract presentation while the study entitled "Effect of COVID-19, Vaccination Ratio, and Human Population on the Reported Canine Rabies Cases in Davao City, Philippines: A Panel Regression Analysis" won second place for an on-site poster presentation. Additional two papers on genomic analysis were also presented in poster and podium on-site presentations.

Rapid Assessment of Health Information Systems towards Pandemic Resiliency and UHC in Two Provinces

Dr. Miguel Manuel C. Dorotan
Alliance for Improving Health Outcomes (AIHO)

To assess the Health Information System in the Provinces of Aklan and Leyte, a comprehensive Health Information System (HIS-RAT) was developed. In 2022, the resulting tool was pilot-tested prior to the implementation in Aklan and Leyte, who were the main partners and beneficiaries of the study.

The process of tool development was divided into 3 phases: item development, scale development, and scale evaluation. The domains identified included (1) HIS capacity, and (2) HIS Functions. Under the HIS Capacity domain, the items to be assessed included: governance, policy, financing, ICT assets, and Human Resources. HIS functions, meanwhile, looked into data generation, data compilation, data analysis, and communication and use of information/knowledge generated from the data gathered. Units of measure and scales for measurement were developed and given to subject matter experts for evaluation for validity.

LGU-mandated eHealth Networked Services for Universal Health Care (UHC LeHNS)

Dr. Dennis Batangan
Ateneo de Manila University- Institute of Philippine Culture

The passage of the Universal Health Care (UHC) Law reiterated the relevance of leveraging eHealth solutions to improve healthcare delivery for Filipinos. In response to this, this project will assist local government units in implementing Digital Health Interventions (DHIs) by developing local health information systems (LHIS).

Specifically, it aims to co-design and co-develop LHIS models that support the digital health and functional requirements of national health information systems. The initiative will utilize eHATID System Techno-governance projects which are eHealth technologies developed by Dr. Batangan and his team.

In 2022, the project team has kept in constant communication with local government units in Pangasinan and Cagayan de Oro City to ensure smooth integration and realization of the roll-out of their interoperable system. In Pangasinan, the eLearning Program was re-offered to revamp its content structure, conduct and management, and communication strategies based on the results and recommendations of its evaluation process. More consultative meetings with the technical working group of Pangasinan Health Office were also conducted to address issues and bugs encountered in the basic version of the Smarter Integrated Local Health Information System (SMILHIS).

In their implementation site in Cagayan de Oro City (CDOC) also known as SMILHIS CDOC, the team conducted an on-site Design Thinking Workshop aimed to review the objectives of the project and assess the status of the customization of the interoperable layer and several aspects, specifically, governance, sustainability, and capacity-building.

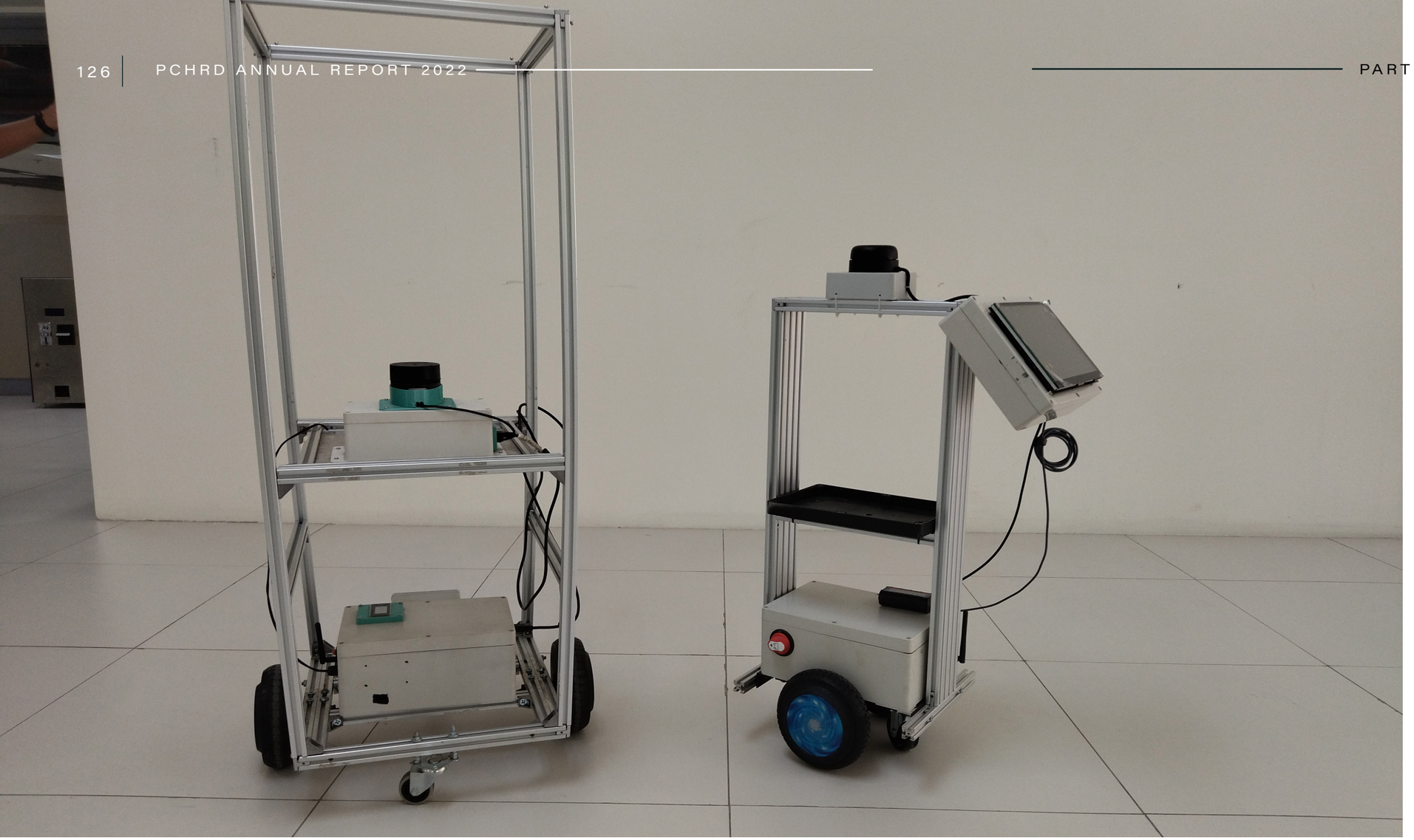
Orthogeriatrics and the Fracture Liaison Service for Elderly Hip Fractures

Dr. Irewin A. Tabu
University of the Philippines- Philippine General Hospital

The project aimed 1) to describe the clinical, treatment, and post-treatment characteristics of geriatric patients with fragility hip fractures, and 2) to measure the following outcomes in geriatric patients with fragility hip fracture, 3) to determine significant clinical, treatment and post-treatment factors, to be known as key performance indicators, associated with the outcomes to be studied, 4) to generate an electronic data collection framework that includes key performance indicators for use in a future sustainable national hip registry.

In 2022, initial orientation on the combined model of care orthogeriatric fragility fracture management (OFFM) and the fracture liaison service (FLS), which are approaches for secondary fracture prevention, were conducted through focus group discussions, together with periodic follow-ups by the research coordination team. The research coordination team also provides direct supervision in both implementation of the treatment pathways and data collection. In addition, quality management of data input is also done by the team every four (4) months.

For patient recruitment, there are already 214 patients with baseline data, and ongoing 109 patients are being followed-up. This is expected to rise in number later once the partner institutions recruited to implement the study have formed their own multidisciplinary orthogeriatric team, and especially their own dedicated data entry person. Meanwhile, collaborating physicians with patients treating geriatric patients using the combined pathway of care have input entries in the digital database, REDCap database, from hard copies of the information data sheets. The REDCap database is a secure web application for building and managing online surveys and databases. The team is also pursuing partnerships with twenty-one (21) institutions to collaborate with the study.



LISA Robot

Logistic Indoor Service Assistant Telepresence Robot

Dr. Anthony James C. Bautista
Department of Mechanical Engineering, University of Santo Tomas

Mobile service robots are designed to perform tasks or services useful to the well-being of humans. With the busy and stressful work environments experienced by health professionals, health facilities are a potential application of these mobile service robots.

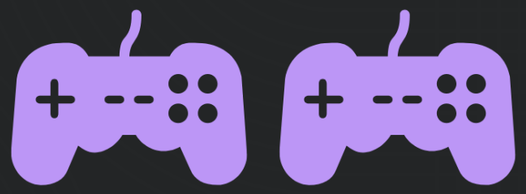
Exploring this potential, a Logistic Indoor Service Assistant or LISA telepresence robot is being developed by Dr. Anthony James C. Bautista to enable healthcare workers to perform mundane tasks such as delivering documents, samples, or medicines within healthcare facilities remotely.

Specifically, the team aims to develop an Android Application that will allow WIFI control for the LISA robot for telepresence application and evaluate its navigation performance involving static and dynamic obstacles. The team will also study the adaptability of the LISA robot in private isolation rooms of hospitals based on the Overall Equipment Effectiveness (OEE) classifications namely; flexibility, mobility, modularity, compatibility, and economy. Lastly, the team is set to conduct policy-gap analysis in using telepresence roots in private isolation rooms of hospitals.

For 2022, progress on the development of the LISA Robot has also been steady. An improvement that was implemented was the use of the Real Time Clock (RTC) model in the LISA Robot for local time keeping in order to avoid time lags between the robot and the host controlling the movement of the robot. In addition, the issue regarding WiFi connection was also resolved to result in a faster response time for the robot, leading to faster mapping capability. This improvement also enabled the robot to be integrated into a hospital's existing WiFi network system as long as the PC is also within the coverage area of the WiFI network.

Meanwhile, on the hardware end, a change in wheel positioning was implemented in order to navigate irregularities on the floor such as humps, floor cavities, and cables. The project team also consulted with the Industrial Engineering Department of UST to conduct a time and motion study to determine the most efficient schedule of the LISA Robot operation in the context of the existing practices and activities in a hospital environment.

The LISA Robot was presented at an international conference entitled, "International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control Environment, and Management (HNICEM)" and exhibited during the 2022 National Science and Technology Week which drew a large crowd of students. Finally, in part of their 6Ps and 2Is, the project team presented the purpose and functionalities of the LISA Robot to students invited from Iloilo Science and Technology University highlighting the role of LISA Robot in aiding healthcare workers to provide quality healthcare.



WE HAVE A NEW PLAYER

GAMIFICATION TECHNOLOGY FOR PATIENTS WITH DEMENTIA, CEREBRAL PALSY, AND MOBILITY LIMITATIONS

Dr. Jaime Caro
University of the Philippines Manila

Immersive Technology Applications in Health

Rehabilitation Management of Patients with Behavioral and Psychological Symptoms of Dementia (BPSD)

Dr. Jaime Caro
University of the Philippines Manila

One of the undertakings that leverage advancement of technology in health is the use of immersive technology as an alternative rehabilitation measure of patients. Intended for those with symptoms of dementia, this study will develop an immersive technology system for rehabilitation in collaboration with uCreate Laboratory, University of Edinburgh, United Kingdom, led by Dr. Veeda Michelle Anlacan.

The project utilized virtual reality projected through both a head-mounted device and a semi-Cave Automatic Virtual Environment (semi-CAVE) set-up to provide an alternative rehabilitation approach for dementia patients through innovative interventions for the management of behavioral and psychological symptoms of dementia.

In 2022, the team tested the software with medical practitioners for their initial clinical studies. Focus group discussions to improve on the prototypes were also conducted. Some of the improvements done was the incorporation of hand-tracking, instead of controllers, to interact with the virtual environment, the integration of a therapist in the device module to provide spontaneous instructions and guidance to the user, and the addition of an avatar customization feature. Following these refinements, initial clinical studies on healthy patients were done, and the next phase of clinical studies are ongoing.

Rehabilitation Management of Patients with Cerebral Palsy and Mobility Limitations

Dr. Jaime Caro
University of the Philippines Manila

Aside from patients with dementia, Dr. Caro's team is also developing an immersive technology system specifically for pediatric patients with cerebral palsy and mobility limitations, the most common cause of motor disability worldwide. It also aims to create an immersive gamification technology system for the management of the conditions of the patients and to determine its acceptability, usability, and safety, as traditional therapy treatments involving surgical procedures and use of medications, or both are rigorous and repetitive.

In 2022, the project team was able to develop a prototype for the head-mounted device and semi-Cave Automatic Virtual Environment (semi-CAVE) set-up with three (3) games, and completed the alpha and beta testing. Further, attendance to virtual conferences on the use of virtual reality tools was also attended, including poster presentations. Building on the outputs developed from the phase 1, phase 2 trials with pediatric patients are now ongoing.

POWer App:

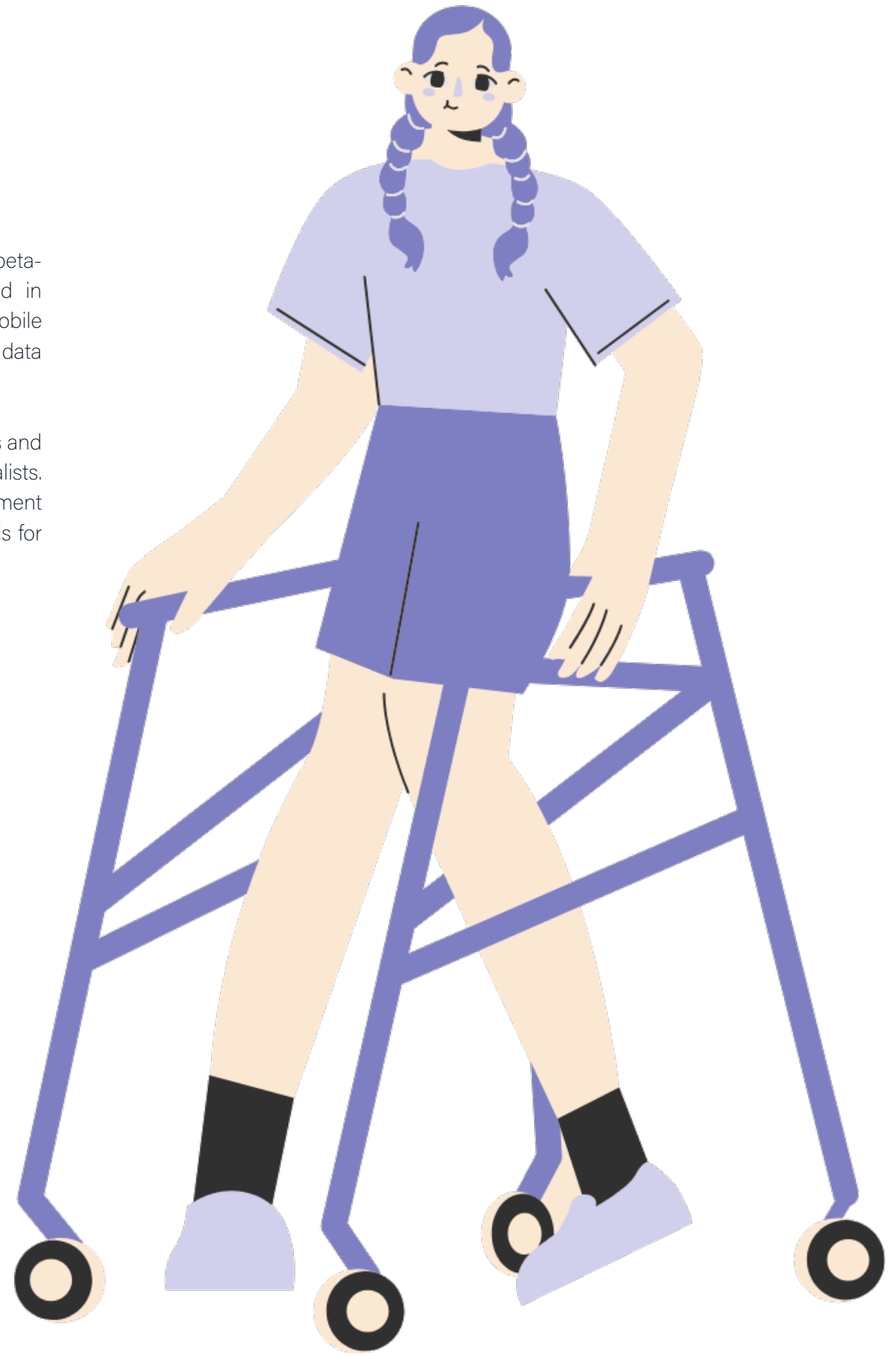
Mobile Health Application Development for Remote Screening & Early Detection of Children with Mobility Impairment

Dr. Josephine R. Bundoc
Physicians for Peace – Philippines (PPP)

Early detection is critical in minimizing the negative impacts of potentially debilitating mobility impairments. This project aims to provide identification and screening for children with mobility impairment.

In 2022, a training module for the application and an operational and implementation plan for the community-based assessment was created in collaboration with the local government unit to ensure the efficient use of the technology among its users. As the project is nearing its completion, the mobile application developed has been undergoing multiple testing and revisions to address system errors identified during the testing. In the beta-testing conducted, bugs were found and resolved in the form where patients input their data via the mobile application. In addition, patient data flow and levels of data access were also identified.

Constructive feedback was provided by both patients and their respective guardians, and by rehabilitation specialists. A second phase of the project is anticipated to implement the mobile application at a larger scale once analysis for both alpha and beta testing are finished.



ARCHER

Addressing and Responding to COVID-19 through Health Research

In 2020, PCHRD created the program entitled, "Addressing and Responding to COVID-19 through Health Research (ARCHER)" to augment the Council's financial resources to support COVID-19 research projects that will contribute to pandemic response.As the COVID-19 virus spreads worldwide, the Philippine healthcare system has been greatly challenged considering COVID-19's significant threat and impact in the country. The World Health Organization (WHO) emphasized the need to accelerate innovative research to help contain the spread of the virus and facilitate care for those affected.

In the Philippines, health research activities are coordinated by PCHRD. Through ARCHER, The Council has been leading the efforts in the conduct and support of health research to come up with solutions that can contribute to addressing the pandemic.

STATUS OF PROJECTS

15 COMPLETED

2 ONGOING

RESEARCH EXPENDITURES IN 2022

PhP 85,309,556.12 (DOST)

Development of a Liquid Medium for On-Site Inactivation of SARS-CoV-2 for RT-PCR Testing

Mr. Alexander Sadiasa
Research Institute for Tropical Medicine

Contributing to the current practices of handling swab specimens, a study spearheaded by Mr. Alexander Sadiasa, MSc, of the Research Institute for Tropical Medicine (RITM) aimed to develop a temperature-stable transport medium that can inactivate respiratory RNA viruses on-site for real-time PCR testing. It will also the applicability of the developed transport medium to clinical specimens for SARS-CoV-2 real-time PCR testing.

The project recruited patients and collected specimens on the following sites: Las Piñas City, Malabon City, Mandaluyong City, Muntinlupa City, San Juan City, San Pedro City, and the RITM. The production of inactivation will cut the cost of using Viral Transport Medium (VTM) and will also save the time and cost of inactivating specimens after collection and transport. This will also ensure the safety of healthcare and laboratory workers from exposure to infectious microbial agents during specimen collection, transport, and processing for laboratory-based virus detection.

Assessment of the Gut Microbiome for COVID-19 Diagnosis and Prognosis

Dr. Leslie Michelle M. Dalmacio
University of the Philippines - Manila

In support of the ongoing efforts to boost the country's COVID-19 testing capacity, the study aims to determine the utility of the gut microbiome profile in the diagnosis and prognosis of COVID-19.

As of April 2022, the project has already completed all the project's deliverables. Results of the study suggest that stool samples can be used to diagnose COVID-19 using the local RT-qPCR kit, from day 1 up to 2 weeks of illness. It also noted a clustering of gut microbial composition among patients with moderate and severe COVID-19. Furthermore, according to this study, there was no correlation observed between differentially abundant bacterial biomarkers and laboratory markers for inflammation in COVID-19. The clinical utility of these two markers are of promising significance.

The study can aid in formulating guidelines that will result in better outcomes for COVID-19 patients. Demonstration of viral particles in fecal material may elucidate on another modality of transmission (i.e. fecal-oral) and association of disease severity with identified gut microbiota may further elucidate on the pathophysiology of COVID-19 infection.

The project has an overall budget of Php 4,882,812.80 (of which Php 2,000,000.00 is charged to the ARCHER Program fund and Php 2,882,812.80 is charged to the PCHRD-GIA program fund).

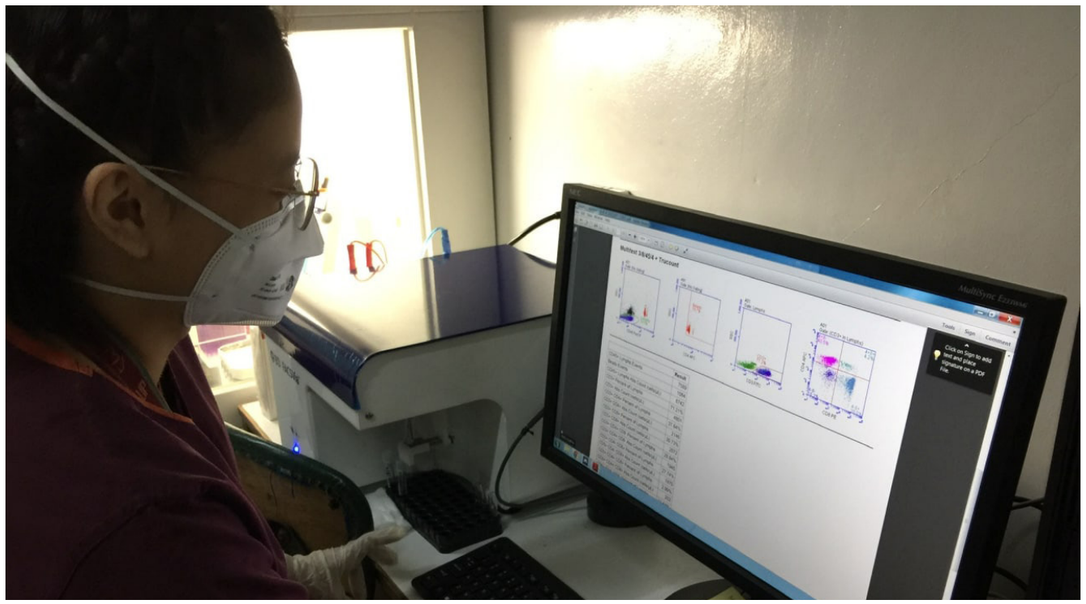
Testing of saliva samples recorded a sensitivity of 79.94% and specificity of 98.94%. With these observations, the use of saliva specimens for PCR detection of SARS-CoV2 may have significant impact in our response to the pandemic.

Suitability of Saliva as an Alternative Clinical Specimen for the Detection of SARS-CoV-2

Mr. Alexander Sadiasa, MSc
Research Institute for Tropical Medicine

The project aims to determine the suitability of saliva as an alternative clinical specimen for the detection of SARS-CoV-2.Completed last December 31, 2021, a total of 1,661 patients were enrolled in the study from whom the following specimens were collected: nasopharyngeal swab, oropharyngeal swab and saliva. The patients were recruited from Las Piñas City, Malabon City, Mandaluyong City, Muntinlupa City, San Juan City, San Pedro City, RITM.

The PCR testing of saliva samples recorded a sensitivity of 79.94% and specificity of 98.94% with overall percent agreement of 95.06%. With these observations, the use of saliva specimens for PCR detection of SARS-CoV2 may have significant impact in our response to the pandemic. The use of saliva specimens would reduce the risk of viral exposure to healthcare workers while minimizing the use of personal protective equipment and other medical resources. Ultimately, this would make high volume testing feasible if enhanced surveillance is to be implemented.



Immune Cell Phenotype Characterization of Moderate to Severe COVID-2019 Patients at the Philippine General Hospital

Dr. B. Januario Antonio D. Veloso, Jr.
University of the Philippines Manila

Science-based guidelines are necessary for better management of COVID-19. By providing immunophenotyping data specifically for Filipino patients to local and international medical specialty societies, the country can better strategize and improve its policies and healthcare practices in dealing with the pandemic.

The study aims to characterize the immune cell phenotype among moderate to severe COVID-19 Filipino patients seen at the Philippine General Hospital.

As of August 2022, the project already completed the majority of its deliverables, specifically patient recruitment, baseline demographic and clinical data collection, quality monitoring of dataset in the REDCap database, sample blood collection, and PBMC isolation and cryopreservation.

Expected to end in April 2023, the target beneficiaries of this study are physicians and their COVID-19 patients, medical community, including local and international medical subspecialty societies, COVID-19 researchers and research institutions, academic/scientific community, and MD-PhD in Molecular Medicine students and graduates.

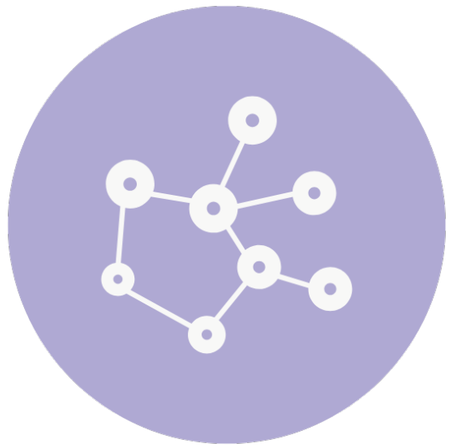
Durability and Extent of Protection of SARS-Cov-2 Antibodies Among Patients with COVID-19

Dr. Ma. Liza Antoinette M. Gonzales
University of the Philippines Manila

In efforts to understand immunity against COVID-19 reinfection, this project aims to describe the durability of SARS-CoV-2 antibodies after an initial exposure and disease, and the extent of protection it confers against reinfection.

In 2022, the project made significant progress in monitoring study participants and determining their level of SARS-CoV-2 antibodies. The proponents are currently conducting statistical analyses and finalizing interpretation of results.

The results of the study will be useful to clinicians, researchers, public health practitioners, and policymakers. Information on the durability of SARS-CoV-2 antibodies, and clues to the whether or not these antibodies are protective against future reinfection, can be used to guide the deployment of limited vaccine stocks, and inform strategies for returning to the workplace and relaxing social distancing measures.



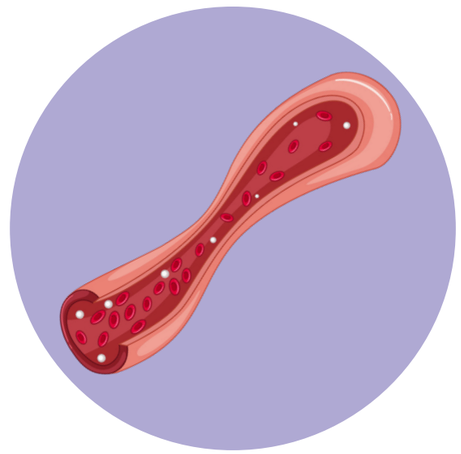
Detecting Cytokine Storm Syndromes and Predicting Disease Progression and In-Hospital Mortality Among COVID-19 patients

Felix Eduardo R. Punzalan
University of the Philippines Manila

Looking into biomarkers of cytokine storm among COVID-19 patients may help in the development of guidelines for the management and outcome monitoring of the patients. Parallel to this, the project aims to determine the biomarkers and cytokines associated with disease progression and in-hospital mortality among patients with confirmed moderate to severe COVID-19 infection. The study covered patients confined in the UP-PGH.

The team completed the project deliverables last March 2022. Results of the study suggest that among patients with moderate to severe COVID-19 recruited by the study, an elevated D-dimer and lymphopenia within 10 days of illness were associated with disease progression and mortality was observed. An elevated LDH and hypoalbuminemia within 10 days of illness were also associated with disease progression. Elevated levels of IP-10 and IL-6 were associated with disease progression and mortality. Elevated levels of IL-18 were also associated with mortality.

These results will help develop a pathway/ algorithm to guide management and outcome monitoring of patients. Patients with COVID-19 could then be screened for hyperinflammation which can identify a subgroup of high-risk patients for whom immunosuppression could improve outcomes.



Association of Abnormal Coagulation Parameters with Adverse Clinical Outcomes among COVID-19 Patients

Dr. Geraldine T. Zamora
University of the Philippines - Philippine General Hospital

As a contribution to existing evidence on managing COVID-19, the study evaluated the association between blood clots (thrombophilias) and adverse clinical outcomes among patients with moderate to severe COVID-19 among patients admitted at the UP-PGH.

The proponents concluded that coagulation abnormalities were common in patients with predominantly severe COVID-19. There was significant association between several of these thrombophilias (abnormal platelet count, elevated D-dimer level, prolonged INR or PTT, positive ACL IgM) and adverse clinical outcomes. This suggests the utility of these coagulation parameters in the monitoring of patients with severe COVID-19. Last November 2021, the study was able to achieve the target sample size and described the coagulation profile of patients with moderate to severe COVID-19 hospitalized at the UP-PGH.

Results of the study will enable a broad range of clinical/ translational and epidemiological studies that would form a comprehensive framework for diagnosis, treatment, and prevention of COVID-19. More importantly, this would also support the country's local capacity in addressing the continuous threat of emerging and re-emerging infectious diseases.

Seroprevalence of SARS CoV-2 in Communities in the Philippines

Dr. Kristine Alvarado-Dela Cruz
Research Institute for Tropical Medicine – Department of Health

As the recommended testing procedure for the diagnosis of COVID-19, PCR has the disadvantage of requiring the presence of genetic material from SARS CoV-2 at the time of sample collection. In this regard, it is key that serologic studies be done to provide insight into exposure history and the development of antibodies in individuals of a given community, also significantly broadening the window period for the detection of past infection or exposure.

This longitudinal study will estimate the seroprevalence of SARS CoV 2 infection in the general population, thereby improving the understanding of COVID-19 transmission, and provide insight into epidemic spread of the disease. This study seeks to estimate what proportion of the Philippine population have been affected by COVID 19, as well as the magnitude and timing of antibody response.

Completed in July 2022, the study covered four representative communities namely: National Capital Region (NCR), Luzon, Visayas, and Mindanao. In the same year, the project completed the enrollment of study participants, as well as the testing of specimens for quantitative S-based and qualitative N-based antibodies via ECLIA. There were 750 samples selected and endorsed to the RITM Department of Virology for testing of viral neutralizing activity via cPass.

The results of the study will provide essential data on the estimated disease burden of COVID-19 in the general population using serologic tests. The data on neutralizing activities of the antibodies detected will also help disease programs and policy makers to have a better understanding of the pandemic spread, and the presence or absence of protective immunity to the disease in the community setting, so as to accurately formulate strategies for disease surveillance and public health response.

Evaluation of Plasma Therapy for Retarding Progression and Preventing Complications in COVID-19

Dr. Jose Nevado, Jr.
*National Institutes of Health, University of the Philippines Manil*a

In response to the need for scientific treatment methods versus COVID-19, several studies were initiated exploring various approaches to address the symptoms of the disease. One of these focuses on the use of plasma therapy. The project was spearheaded by Dr. Jose Nevado Jr., of the National Institutes of Health - UP Manila, in collaboration with the Lung Center of the Philippines. It generally aimed to determine the effectiveness of plasma transfusion on the secondary prevention of death, shock and organ damage from COVID-19.

The project has recruited a total of 119 participants in the study, aged 18-50 years old who are highly suspected or confirmed to have mild COVID-19. Currently, the project team is preparing the terminal reports. The project was started in order to determine the effectiveness of plasma transfusion on the secondary prevention of death, shock and organ damage in COVID-19. It aims to provide data to support the efficacy and use of plasma components as a therapy for sepsis, and in particular for COVID-19. If effective, secondary prevention offers the promise of shortened hospital stay, lesser mortality and lessened need for costly interventions, as well as disabilities related to exposure to the organ complications and invasive procedures.

Intravenous Tocilizumab as Treatment for Hospitalized Patients with COVID-19

Dr. Eric Jason B. Amante
Philippine General Hospital

Contributing to the efforts towards discovering treatment methods for COVID-19, a project led by Dr. Eric Jason B. Amante was conducted to determine the effectiveness of IV Tocilizumab in the treatment of severe and critical COVID-19-related pneumonia patients.

Implemented by the Philippine General Hospital (PGH), Forty-nine (49) patients were randomized in the tocilizumab arm and 49 in the placebo arm. There was no significant difference in age, comorbidities, COVID-19 severity, need for mechanical ventilation, presence of acute respiratory distress syndrome, or biomarker levels between groups. Use of adjunctive therapy was similar between groups, with corticosteroid used in 91.8% in Tocilizumab group and 81.6% in the placebo group, while remdesivir was used in 98% of participants in both groups.

Dr. Amante's team found that there was no significant difference between groups on intention-to-treat analysis and difference in time to improvement of at least two categories relative to baseline on the 7-point ordinal scale of clinical status.

In conclusion, the use of tocilizumab on top of standard of care in the management of patients with severe to critical COVID-19 did not result in significant improvement as defined by the World Health Organization's (WHO) 7-point Ordinal Scale of patient status, nor in significant improvement in incidence of mechanical ventilation, incidence of ICU admission, length of ICU stay and mortality rate.

PART 2

To ensure equity in research capacity, the Council supports institutional development initiatives.

INSTITUTION DEVELOPMENT

SCHOLARSHIP GRANTS

The DOST-PCHRD implements scholarship programs as a major strategy to develop and nurture the country's critical mass of health researchers. This is vital to the continued creation of knowledge and technologies for health development.

Scholarship grants are intended for qualified and deserving students who must enroll in DOST-PCHRD priority graduate degree programs (MS, PhD, and MD-PhD) in local and international partner institutions.

SCHOLARS IN 2022

6 GRADUATED

181 ONGOING

16 NEWLY-ACCEPTED

Nurturing the next generation of Filipino health researchers.

Scholars funded and monitored by DOST-PCHRD in 2022

Status	PCHRD-Funded	DOST-SEI Funded (PCHRD-monitored)
COMPLETED		
MS MD-PhD	1 -	- 5
ONGOING		
MS PhD MD-PhD	18 4 44	68 20 27
NEW		
MS PhD MD-PhD	2 6 8	- - -
TOTAL	83	120

The Council is currently implementing six scholarship programs.

LOCAL

MD-PhD in Molecular Medicine

A joint initiative with University of the Philippines Manila, is an eight-year dual degree program that aims to develop and train aspiring physician-scientists with extensive knowledge and experience in the field of clinical and biomedical research.

In 2022, five MD-PhD Molecular Medicine scholars graduated and earned their dual degrees. To date, the MD-PhD program has a total of 26 graduates. Eight new scholars were supported this year.

PhD in Health Research

Operationalized under the University of Sto. Tomas Graduate School, in collaboration with the University of South Australia (UniSA), it is a three-year program which uses blended learning and provides an alternative track to acquiring a doctorate degree. This program aims to improve the teaching and research capabilities of health professionals.

In 2022, a total of four new scholars were supported under the PhD in Health Research program. Three scholars started in the Second Semester 2021-2022 while one scholar started during the First Semester 2022-2023.

MS Molecular Medicine

A two-year program which was implemented through the joint efforts of DOST-PCHRD and St. Luke's Medical Center College of Medicine William H. Quasha Memorial. The program aims to strengthen and upgrade the skills of health professionals and researchers in the field of applied biomedical research.

In August 2022, one scholar, successfully earned her degree.

FOREIGN

MSc in Tropical Medicine

A two-year program of the DOST-PCHRD in partnership with the Faculty of Tropical Medicine (FTM), Mahidol University and Southeast Asian Ministers of Education Tropical Medicine and Public Health Network (SEAMEO TROPMED Network) Thailand which aims to develop and implement foreign graduate scholarship programs in tropical medicine with the mission of addressing health systems needs in the country

In 2022, two scholars were supported in the first implementation of the program. The first batch of scholars started their program in Mahidol University in August 2022.

PhD Program in Molecular Biomedicine of UNITS

The DOST-PCHRD, the University of Trieste (UNITS) and Fondazione Italiana Fegato (FIF) entered into an Agreement in 2019 to develop and implement a program focused on molecular hepatology within the PhD Program in Molecular Biomedicine of UNITS. The three-year graduate program integrates basic research and clinics focusing on the study of molecular approaches to cancer biology, genetics, jaundice, and metabolic diseases.

In 2022, two new scholars were accepted in the PhD program. Meanwhile, there are four ongoing PhD scholars who are currently working on their dissertations in Italy.

Cohort Doctoral Studies Program

The DOST-PCHRD and James Cook University (JCU) offer a Cohort Doctoral Studies Program that will allow professionals to continue addressing health system needs and saving lives in the Philippines while pursuing a doctoral degree in JCU, a world-class teaching and research institution. The flexible part-time program allows clinicians to benefit from the expertise of a JCU-based supervisor while conducting research locally.

In 2022, the first call for applications to the new program was posted last October. Out of the interested applicants, one was endorsed to JCU last November for further evaluation. Dr. Marc Edsel Ayes, Laboratory Manager and Clinical Health Officer of University of the Philippines - Philippine Genome Center, was accepted and will start his doctoral program early 2023.

MD-PhD in Molecular Medicine Scholarship Program Events

MD-PhD Colloquium

Included in the line up of activities for the DOST-PCHRD 40th anniversary, the UPCM together with the Council conducted the MD-PhD Colloquium on 5-6 May 2022 via the event online platform and Facebook live.

The colloquium provides a platform to update the public on the latest achievements of the program as well as to inform the attendees about latest developments, research, and innovations regarding health research and development. In the event, the scholars were able to share their works on schistosomiasis, malaria, COVID-19, Gitelman syndrome, Kawasaki disease, and HIV which are all pressing health issues of the Philippines.

Summer Immersion Program

To familiarize the scholars with the R&D landscape of the country, PCHRD conducted the 2022 Summer Immersion Program for the MD-PhD in Molecular Medicine Batch 12 scholars on 13-1 June, 2022 via Zoom Conference.

The program aims to orient and expose the future physician-scientists in the different science and research-oriented institutions as a way to foster their research appreciation and future involvement in S&T and R&D initiatives of the Council. The scholars had the opportunity to virtually visit the following DOST agencies and institutions: DOST Central Office, PCHRD, Industrial Technology Development Institute (ITDI), Food and Nutrition Research Institute (FNRI), UPLB - Biotech, International Rice Research Institute (IRRI), United Laboratories, Inc. - Sekaya R&D Plant, Philippine Genome Center (PGC), Newborn Screening Center - NIH Manila and Research Institute for Tropical Medicine (RITM).

MD-PhD Graduates

The MD-PhD in Molecular Medicine is monitored by DOST-PCHRD under the DOST - Science Education Institute (SEI) Accelerated Science and Technology Human Resource Development Program (ASTHRDP). This year, five MD-PhD scholars completed the program and attended the UPCM 113th Commencement Exercise at the University Theater, University of the Philippines Diliman, Quezon City on 7 August 2022.

Two graduates of MD-PhD in Molecular Medicine program, Dr. Ourlad Alzeus G. Tangtengco and Dr. Mary Nadine Alessandra R. Uy, passed the 2022 Physician Licensure Examination.

New Batch of Aspiring Physician-Scientists (Class 2030)

DOST-PCHRD welcomed the new batch of MD-PhD scholars (Batch 13). The Memorandum of Agreement Signing Ceremony was held on 31 August 2022 at the UP Manila Dormitory. Eight (8) scholars were accepted into the program for AY 2022-2023.

MD-PhD Summit 2022

To welcome the new batch of MD-PhD scholars, the MD-PhD Committee conducted the MD-PhD Summit 2022 with the theme: "*Dagitab: Damhin ang Kislap ng Haraya*" on 4 October 2022 via hybrid set-up. The event aims to immerse the new scholars in the life of MD-PhD (student and professional) as well as to recognize the achievements of ongoing scholars during the past academic year.

FELLOWSHIP

Building a critical mass of researchers with required knowledge and skill to competently carry out health research.

Fellowship in Epidemiology
Program Development and Pilot Implementation

The Fellowship in Epidemiology Training Program has been identified as a crucial step to capacitate health researchers with the required knowledge and skill to be able to competently carry out quantitative health research. It is one of the means to build a critical mass of researchers with such competencies.

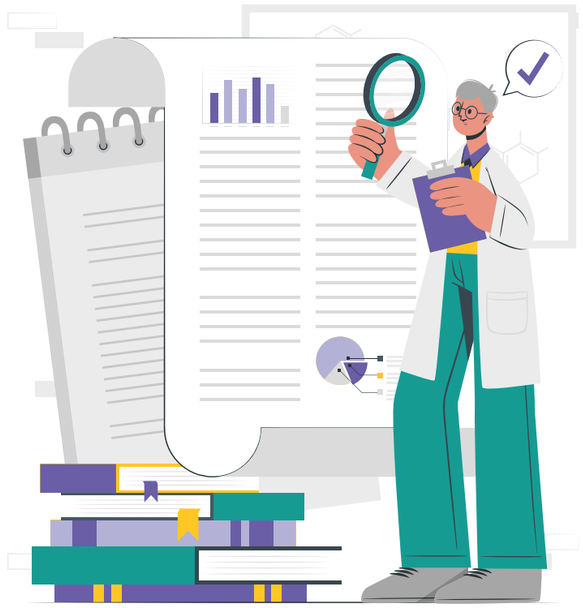
In cooperation with the PNHRS Capacity Building Committee, the DOST-PCHRD partners with the University of the Philippines College of Public Health Inc. (UPCPHFI) to initiate the implementation of an Epidemiology Fellowship Program. The project aims to develop and pilot test a ten-month Epidemiology Fellowship Program to capacitate young researchers with the knowledge and skills in conducting Epidemiologic research.

Started on 17 January 2022, the fellowship training consisted of an online delivery of the instruction using a modular approach. The teaching strategies included lecture-discussion, in-class readings, session exercises and discussion of the exercise answers, module quiz, and research project with mentoring.

In 2022, an oral presentation was conducted and was followed by a series of research fora.

To evaluate the research paper of the fellows, an oral presentation followed by a series of research fora were conducted on the following dates: 27-28 June 2022, 22 September 2022, 29 October 2022, and 5 November 2022. Aside from these activities, a modular training activity was also organized so that fellows can demonstrate their proficiency in quantitative research in public health.

On 7 November 2022, a virtual recognition ceremony was conducted for six (6) fellows who successfully completed the ten-month Epidemiology Fellowship Program. Five fellows were given the Fellow in Epidemiology Award for satisfactorily meeting the completion requirements, and two of the five fellows received an Excellence Award for their exemplary performance.



The PCHRD-TMC Physician-Scientist Research Fellowship

Creation of a Pioneer Health Research Fellowship Program through a Private Training and Research Hospital in the Philippines

The Medical City (TMC) established the Physician-Scientist Research Fellowship (PSRF) Program, a pioneer research fellowship program in the Philippines. The goal of PSRF is to develop physicians, the next leaders of the country's health research and innovations, by giving them opportunities to conduct research in their specialized fields of interest, while continuing to serve their patients.

With the support from the DOST-PCHRD, the program expands the country's pool of health research experts, who can solve the unmet medical needs of the Filipinos, guided by the National Unified Health Research Agenda (NUHRA).

In 2022, Dr. Gabriel Baluyut and Dr. Alma Calavera are two fellows of the program. Dr. Baluyut's research entitled,"Artificial Intelligence Powered Chest X-ray screening for the clinical diagnosis of Osteoporosis," aims to investigate the clinical utility of the Osteo-AI (pronounced Osteo-Eye) Deep Learning powered chest x-ray screening tool for osteoporosis which is tuned for the Filipino anatomy. Dr. Calavera's research, on the other hand, is entitled, "Construction of CD19 Chimeric Antigen Receptor T-Cells for Relapsed/ Refractory B-Cell Malignancies" which aims to make effective cancer treatment for Filipino patients with relapsed/refractory B-cell malignancies, e.g. acute lymphoblastic leukemia and diffuse large B cell lymphoma, which are unresponsive to chemotherapy with lower survival rates if managed with conventional regimens.

Both fellows followed a timetable that includes the research training administration modules, as well as guided mentorship sessions from November 2021 to August 2022 that were held via zoom calls and google classroom sessions. The program was completed on 31 August 2022.

PSRF Program Year 1 Update and Milestones

To acknowledge the milestones of the first year of the program, an event was held at Augusto Barcelon Auditorium in TMC last June 24, 2022. The event aimed to highlight the partnership of DOST-PCHRD and TMC and the accomplishments of the two physician-scientist fellows. It also aimed to inspire the young doctors in training and practicing clinicians and specialists to discover the exciting world of being a physician and scientist at the same time.

CAPACITY BUILDING

In 2022, five new capacity building projects were funded by the Council, seven ongoing projects are being monitored.

NEW

Capacity Building Initiative for the Philippine College of Emergency Medicine (PCEM) Residents, Fellows, and Consultants

Approved in November 2022, the project already started recruiting project team members and project staff and held planning and initial coordination meetings for the capacity-building activities that will be conducted for the PCEM. This initiative, headed by Dr. Jennifer M. Nailes of the University of the East Ramon Magsaysay Memorial Medical Center, aims to provide basic research methods (BRM) training for PCEM residents, fellows, and consultants.

Valuation of a Novel Private Provider Interface Model of Tuberculosis Care in Metro Manila, the Philippines

The project is one of the top innovations recognized during the implementation of the 2020 Gelia Castillo Award for Research on Social Innovations in Health. Led by Dr. Jason Alacapa of Innovations for Community Health, Inc., the project aims to highlight the merits of the Kalinga Health private provider interface model of tuberculosis care in Metro Manila, the Philippines.

Contextualizing PsycServ's Ginhawa Model: Responding to the Challenge of Integrating Mental Health and Psychosocial Support (MHPSS) into Higher Educational Systems

This project is also one of the top innovations recognized during the implementation of the 2020 Gelia Castillo Award for Research on Social Innovations in Health.

Based on its own Six-Component Ginhawa Model and with the goal of helping (future) client Higher Education Institutions (HEIs) integrate Mental Health and Wellbeing (MHW) into their educational philosophy and system, PsycServ's key service and program offerings are replicated to become sustainable and contextually relevant. This was done through closely supervised and guided training in client-selected modules.

In 2022, the team, headed by Dr. Divine Love Salvador of UP Diliman, built a database for client pre- and post-engagement assessment, and implemented UP PsycServ's key services. The project team also conducted interviews with volunteer supervisors, psychosocial support specialists (PSSs), administrators of client units of PsycServ's learning programs, and PsycServ's coordinator. Among the accomplishments of the project include the conduct of the qualitative and quantitative analysis for pre-existing data, integration of the quantitative and qualitative results of pre-existing data, and conduct of qualitative analysis on the interview data.

Health Technology Assessment Education: A Series of Introductory Workshops

With the goal of educating stakeholders and the healthcare system on methodologies for producing Health Technology Assessment (HTA) evidence and using HTA evidence in decision-making processes, Dr. Teresa Luisa G. Cruz of the UP Manila College of Medicine proposed the project entitled, "Health Technology Assessment Education: A Series of Introductory Workshops."

In 2022, the first session of the two-day virtual training workshop was held last 24-25 November 2022. A total of 63 people attended the training, which had nine sessions, seven lectures, and two workshops. The next series of the workshop will commence in January 2023.

Implementation of the Gelia Castillo Award for Research on Social Innovations in Health (GCARSIH) 2022

Following its successful inaugural run in 2020, on 2 March 2022, the Council approved the implementation of the Gelia Castillo Award for Research on Social Innovations in Health (GCARSIH) 2022. This year's GCARSIH included a training and mentoring package in partnership with Hybridigm Consulting, Inc.

ONGOING

Data Analysis: A Conceptual Approach

The project, led by Dr. Ofelia P. Saniel of UP Manila College of Public Health, aims to develop training modules on data analysis to be used by the RHRDCs in conducting the second part of the series of training activities on research methods.

In 2022, the team developed nine (9) prototype modules and supplementary materials on data analysis, and conducted four (4) batches of training sessions using the developed modules and materials.

To date,the nine (9) modules and supplementary materials on data analysis are currently being reproduced for distribution to the RHRDCs.

Capability Building Initiative in HIV and Schistosomiasis: Mentoring and Development of Proposals

The Capability Building Initiative in HIV and Schistosomiasis: Mentoring and Development of Proposals project is led by Dr. Lydia R. Leonardo of UP Manila College of Public Health. In 2022, the project mentored eight (8) proponents from regions 7, 8, 11, 12, and BARMM. The project team provided assistance in the review, revision and improvement of capsule proposals and their development into full-blown proposals which will be submitted for evaluation of funding agencies. After internal and external reviews conducted, the eight (8) proposals on HIV and schistosomiasis were endorsed to various Research Ethics Committees (RECs) for ethics evaluation.

Research Capacity Building and Strengthening Initiative in Maternal and Child Health: Mentoring and Development of Proposals

The Research Capacity Building and Strengthening Initiative in Maternal and Child Health: Mentoring and Development of Proposals project is led by Dr. Jacinto Blas V. Mantaring III of Foundation for the Advancement of Clinical Epidemiology, Inc. The project aims to provide capacity building training to researchers on maternal and child health and mentor the completion of maternal and child health proposals. In 2022, the project launched a Call for Proposals on Maternal Child Health and evaluated all the capsule proposals submitted. From the 48 proposals received, 15 proposals that have been ranked the highest by the five (5) evaluators were selected. An orientation was conducted and a google classroom for the lecture videos and assignments of the proponents was created. The project team is mentoring the proponents by conducting synchronous and asynchronous training via zoom on different research methods topics.

Training Workshops for the Technical Review Boards (TRBs) of the Regional Health Research and Development Consortia (RHRDCs)

The DOST-PCHRD partners with the Foundation for the Advancement of Clinical Epidemiology (FACE) to implement training workshops for the members of the Technical Review Boards (TRB) of the 17 Regional Health Research and Development Consortia (RHRDCs). To determine the TRB members training needs a Training Needs Assessment (TNA) survey was conducted.

A two-day virtual training workshop with the University of the Philippines (UP) Manila Research Implementation Development Office (RIDO) was held on 25-26 July 2022. Attended by more than 60 faculty members and Vice Chairs for Research of UP - Philippine General Hospital, the training tackles topics on research methods and proposed RHRDC forms for use during technical evaluation.

On 18-19 August 2022, a face-to-face writeshop was conducted to discuss and apply the revisions for the TRB Manual of Operations. Meanwhile, the training workshop for the TRB members of Regional Health Research and Development Consortium XI (RHRDC XI), Health Research and Development Consortium - Region XII (HRDC-12), and BARMM Health Research and Development Consortium (BHRDC) were held on 14-15 September 2022 at Apo View Hotel, Davao City.

Training for TRB members in Northern Luzon and National Capital Region is set on the first quarter of 2023.

Ending HIV transmission by Optimizing Pre-exposure prophylaxis in East Asia (HOPE)

HOPE stands for ending HIV transmission by Optimizing Pre-exposure prophylaxis in East Asia. The HOPE Network is a joint international initiative by public funding organizations in East Asia Summit member countries. This consortium is composed of the Monash University (Australia), the Institute of HIV Research and Innovation (Thailand), and HOPE Philippines (HOPE PH), which is implemented by the Foundation for the Advancement of Clinical Epidemiology, Inc. (FACE, Inc) through the leadership of Dr. Nina Castillo-Carandang. The project's overarching goal is to build a network of stakeholders that will promote the broader use of pre-exposure prophylaxis (PrEP) as a vital part of the armamentarium for preventing and controlling HIV and AIDS.

In 2022, the team has successfully implemented the following activities: a) signed memorandum of understanding with three study sites in Mandaluyong, Calamba, and Iloilo City, b) conducted a crowdsourcing logo contest as a "taster" of the crowdsourcing call for innovations and to strengthen projects branding and identity, c) completed screening and final selection of entries received from crowdsourcing contest to increase PrEP use, d) announced the top 10 winning entries in social media platforms. e) completed key informant interviews and focus group discussions among PrEP users and health care providers in the three study sites (SAIL Clinic in Calamba, FPOP in Iloilo, LoveYourself, Inc. in Mandaluyong), and f) built the initial HOPE Philippines website.

BALIK SCIENTIST PROGRAM

2022 Balik Scientist Awardees (PCHRD)

10

Continuing and Ongoing Balik Scientists with Completed Engagements

17

Continuing and Ongoing Balik Scientists monitored

24

TOTAL EXPENDITURES IN 2022

PhP 18,910,598.56

Tapping into the ingenuity and expertise of Filipinos abroad to strengthen the S&T capabilities of local researchers in the academe, public and private sectors, and industry.

PCHRD Balik Scientist Awardees in 2022

Dr. Myra O. Villareal
Bicol University

Dr. Aloysius R. Domingo
UP-NIH

Dr. Ike C. de la Peña
Manila Adventist College

Dr. Thaddeus M. Carvajal
DLSU Manila

Dr. Rose Constantino
Cebu Normal University

Dr. Gerard Dumancas
University of San Agustin

Dr. Isaiah Paolo Lee
UP Diliman

Dr. June Bryan De la Pena
Eastern Visayas Health Research
and Development Consortium

Dr. Heidie Frisco-Cabanos
UP Manila

Dr. Jennifer Yang
UP Manila

Institutionalized through the Republic Act 11035, the Balik Scientist Program (BSP) aims to tap into the ingenuity and expertise of Filipinos abroad to strengthen the S&T capabilities of local researchers in the academe, public and private sectors, and industry.

As one of the implementing arms of the Department of Science and Technology, the PCHRD implements BSP to contribute to the identified health research priorities included in the NUHRA and the HNRDA.

Significant outputs of the awardees included publication of six articles in ISI/Scopus journals while 13 articles were pending for submission, preparation of three DOH-FDA policies and guidelines on regulations for clinical trial conduct and three manuals on regulatory practices, and development of three curricula/modules for host institutions.

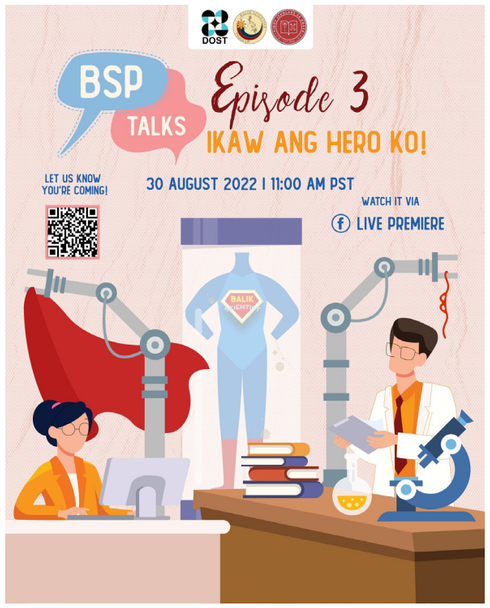
Building A Safer Future: VIP Balik Scientists Exit Report Presentation

The current pandemic has brought to light the necessity of having in-house virologists and a facility that will serve as a meeting place for researchers working on human, animal, and plant virology. The DOST spearheaded the establishment of the Virology and Vaccine Institute of the Philippines or the VIP.

Recognizing the road to VIP establishment is lengthy and laborious, seven virology specialists were engaged under the Balik Scientist Program (BSP), to support the VIP's major initiatives carried out by the Industrial Technology Development Institute (DOST-ITDI). The following virology specialists who shared their expertise were: Dr. Teodoro Fajardo Dr. Myra Hosmillo, Dr. Chrsitina Leyson, Dr. Elpidio Nadala, Dr. Leodevico Ilag, and Dr. Lourdes Nadala, engaged with PCHRD. While Dr. Homer Pantua was engaged with PCAARRD.

These Balik Scientists' contributions and accomplishments in "Building a Safer Future" as advisors to the VIP were recognized in the virtual Exit Report presentation held on 3 May 2022:

- Served as bridges in forging collaborations with reputable virology institutions across the globe;
- Opened the doors for opportunities for our budding scientists to be trained and educated by known virologists from institutions in various parts of the world;
- Helped promote the VIP and virology science to the public, through the VIP Webinar Series. A total of over 10,000 people registered for the 21 installments of this education and information campaign of the VIP; and
- Helped in the planning of the establishment of the VIP at the Clark New City in Capas, Tarlac by providing technical expertise in the facilities needed by an institute as crucial as the VIP.



BSP Talks Webinar Series

Following the success of the first episode in 2021, the DOST in collaboration with Pinoy Iskolars sa Korea (PIKO) continued the conduct of BSP Talks, a webinar series that aims to explain and demonstrate the Balik Scientist Program (BSP) application process in a simple and creative manner.

In 2022, two (2) BSP webinar series were conducted. The second episode entitled, "Match Tayo!" was streamed live on the BSP Facebook page on 15 February 2022. This episode featured three ways a Balik Scientist can be matched with a host institution. The first strategy showed successful matching through active exploration of the aspiring Balik Scientist of a potential host institution whose R and D priorities are aligned with his research interest. The second matching strategy is a host institution directly reaching out and tapping a prospective Balik Scientist depending on their needs. Lastly, the BSP Secretariat may assist in matching a prospective Balik Scientist with a potential host institution.

The third episode entitled, "Ikaw ang Hero Ko!,"held on August 30, 2022 is also broadcasted live on DOST-Balik Scientist Program Facebook page. The online webinar highlighted the testimonials of 10 local researchers who acted as host scientists for our Balik Scientists. They shared their experiences and the reasons why they consider our Balik Scientists as modern-day heroes. With their testimonials, the host scientists expressed their utmost gratitude for the commitment and support of the Balik Scientists who nurtured, strengthened and guided them in the implementation of their R&D and technology transfer initiatives. It demonstrated the Balik Scientists' vital role in nation building through the introduction of strategic technologies that help address pressing needs of the country.

Balik Scientist Program Orientation and Needs Assessment in CAR

To encourage various research and development institutions (RDI) in Cordillera Administrative Region (CAR) to become host institutions for Balik Scientists, the DOST-PCHRD conducted the "Balik Scientist Program and S&T Fellows Program Orientation and Needs Assessment among RDI Networks in CAR" on June 24, 2022 at the Venus Parkview Hotel.

Attended by 87 participants from various non-government agencies, state universities and colleges, higher education institutions, and members of the Cordillera Regional Health Research & Development Consortia (CRHRDC), the event program tackled the benefits, privileges of BSP host institutions as well as the application process. Another topic highlighted in the program was the presentation of the accomplishments and the contributions of the Balik Scientists to the growth of host institutions in terms of R&D interventions and innovation. The roster of Balik Scientists who were previously and currently engaged were also presented to the participating institutions.

In the needs assessment workshop, participants were asked to identify institutional R&D thrusts, specify current programs and projects being implemented or proposed or in the pipeline of their institutions, determine the highly specialized expertise lacking and needed, and identify the gaps to be filled by potential Balik Scientists.

BSP joins the National Science and Technology Week

The Balik Scientists Program took part in the NSTW celebration by having a booth where both students and professionals could learn more about the Program. This was done in alignment with the goal of highlighting international S&T links. The games run by the BSP were played by both students and professionals. They distributed brochures and other materials.

8th BSP Annual Convention

With the theme: "Balik Scientist: Kasangga sa Paglinang ng Agham at Teknolohiya para sa Maunlad at Matatag na Kinabukasan," the 8th Balik Scientist Program Annual Convention was held on 14 October 2022 at the Philippine International Convention Center (PICC), Pasay City.

The convention showcased the work of Balik Scientists in a variety of fields, including agriculture, aquaculture, natural resources, health, industry, energy, and emerging technologies. It also highlighted and recognized the crucial contributions of Balik Scientists to the Philippine nation's advancement in both science and economy through their R and D activities.

President Ferdinand Marcos, Jr. graced the occasion and delivered the keynote address. A total of 162 participants who joined the event were drawn from the program's network of Balik Scientists, host institutions, stakeholders, professional societies and organizations, international partners and collaborators, and local research communities.

The event was also broadcasted to recognize the Balik Scientists out of the country and the Host Institutions from different regions, and to involve potential participants to the Program, prospective Balik Scientists and Host Institutions alike.

ETHICS

ACCREDITED RECs IN 2022

TOTAL EXPENDITURES IN 2022

PhP 4,862,097.51

Ensuring adherence to the universal principles for the protection of human participants in research

The DOST-PCHRD values the well-being, dignity, and rights of human research participants in looking for science-based solutions for the health needs of Filipinos. This is why forwarding health research ethics in the country remains to be one of the major thrusts of the Council.

The Philippine Health Research Ethics Board (PHREB) was created through DOST Special Order No. 091 s 2006 and institutionalized as a policy-making body through the Philippine National Health Research System Act of 2013 (RA 10532) to "ensure adherence to the universal principles for the protection of human participants in research."

In 2022, guided by its mandates, the PHREB led the development and launching of the 2022 National Ethical Guidelines for Research Involving Human Participants.

The document, which guides all research stakeholders in the ethical conduct of research in the country, was launched on 16 March 2022 during a pre-conference session of the DOST-PCHRD 40th Anniversary Celebration, after achieving the PHREB's approval, ad referendum, through PHREB Resolution No. 001 on 01 March 2022.

The PHREB also organized a session during the 15th Philippine National Health Research System (PNHRS) Week celebration entitled, "Measuring the Impact of CIDTA and CSA and the Role of its Partners in Achieving the KPIs", on 9 August 2022. It highlighted the roles of the Committee on Information Dissemination, Training, and Advocacy (CIDTA) and the Committee on Standards and Accreditation (CSA) in achieving the goals of the PHREB to promote, monitor, and capacitate functional research ethics committees (REC).

Two simultaneous sessions of "Practical Training for REC Staff and Members" were also conducted on 10 August 2022 via Zoom Meeting as a PNHRS Week Pre-Conference Session. One of the training was facilitated by Dr. Marita VT. Reyes and Dr. Angelica D. Francisco, and the other one was facilitated by Dr. Sonia E. Bongala and Dr. Fred P. Guillergan. Each training was attended by REC Chair, Member Secretary, and Staff Secretary from selected institutional Research Ethics Committees. A total of 75 participants attended the simultaneous training sessions with 66 participants identified as researchers.

In the same year, the PHREB accredited 36 Levels 1, 2, and 3 RECs, and assisted in the conduct of 65 ethics training-workshops. The PCHRD also provides Secretariat support to the National Ethics Committee, which accepted and reviewed 15 research protocols in 2022.

HEALTH RESEARCH AWARDS

DISTRIBUTION OF AWARDEES IN 2022

- 10 GCARSIH
- 10 UNDERGRADUATE THESIS GRANTS
- 3 ORAL RESEARCH PAPER PRESENTATION COMPETITION

TOTAL EXPENDITURES IN 2022

PhP 831,527.67

Giving recognition to health researchers for their exemplary research efforts and contributions in enhancing the country's health research capabilities.

The Council is currently giving four awards in health research.

Alberto G. Romualdez, Jr. Outstanding Health Research Award (AROHRA)

Offered every three years, the award gives recognition to a research program or project that has demonstrated the link between research and practice through the utilization of research findings in the health delivery system. The award has two categories, namely: Biomedical Research and Health Services Research.

In 2022, winners of 2021 AROHRA were featured during the Talakayang HeaRT Beat Press Conference on January 26, 2022.

Best Mentor in Health Research Award

The Best Mentor Award is offered biennially to recognize and reward mentors in health research who have built the capacities of researchers in the health sector and, in the process, propelled significant advances in the PNHRS' thrusts as identified in the National Unified Health Research Agenda (NUHRA).

In 2022, the Council conducted the awarding of the 2021 Best Mentor in Health Research Award and launched the Call for Nominations for the 2023 Best Mentor in Health Research Award.

DOST-PCHRD Undergraduate Thesis Grant in Natural Products

The thesis grant provides fund support to all undergraduate students who will conduct their thesis on natural products. It aims to sustain a research culture in natural products to increase the number of research and later on build a pool of researchers/ experts specializing in the field.

In 2022, the call for the 2022 DOST-PCHRD Undergraduate Thesis Grant in Natural Products was opened last 17 March 2022 during the PCHRD's 40th Anniversary Celebration. A total of ten (10) teams from Regions 3, 4A, 9, 10, 11, and BARMM were awarded with a thesis grant amounting to PHP 50,000.00 The program also condcuted a virtual Oral Research Paper Presentation Competition for the Grantees of the DOST-PCHRD Undergraduate Thesis Grant in Natural Products during the 15th PNHRS Week Celebration.

Gelia Castillo Award for Research on Social Innovations in Health (GCARSIH)

The GCARSIH is offered biennially to recognize the outstanding social innovations that address persistent, societal and health systems challenges. Through the innovators' experience, we can better understand why and how social innovations create impact and discover how to scale up these effective interventions.

In 2022, the Call for Applications for the 2022 GCARSIH was conducted. The winners and finalists were awarded in the same year. As an incentive, a seven-week training and mentoring package on research grant application and proposal writing was also held virtually for the winners and finalists.

2022 Gelia Castillo Award for Research on Social Innovations in Health (GCARSIH)

In 2022, 82 innovators participated in the GCARSIH, which honors excellent social innovations that solve enduring societal and healthcare system problems. The honor bears the name of Dr. Gelia T. Castillo, a prominent national scientist who stressed the value of scientific endeavors providing a societal good.

The Philippines' healthcare system still faces difficulties in providing patients with access to high-quality medical care and sufficient medical supplies. A multidisciplinary movement called social innovations in health has recently arisen to address these prevalent and enduring health challenges. Social innovation in health is described as creative responses created and put into practice by a range of players in response to a pressing medical need within a specific geographic setting. With this method, healthcare is now more accessible, economical, and efficient. This trend in the Philippines is heavily influenced by the Gelia Castillo Award for Research on Social Innovations in Health (GCARSIH), which in its first cycle in 2020–2021 identified outstanding social innovations.

By tackling health issues, these social innovations—which were developed by Filipino social innovators for Filipino communities—have significantly impacted communities. The GCARSIH aims to honor exceptional social innovations that tackle pervasive societal and healthcare system problems. It acknowledges that understanding how and why social innovations affect community health can be improved via learning from the experiences of social innovators. Additionally, GCARSIH aims to help social innovators develop and scale their ideas so they might potentially be adapted to other areas with comparable healthcare problems.

GCARSIH tapped the DOST-PCHRD and DOH national networks to look for social innovations across the nation. The Regional Health Research and Development Consortium's main responsibilities included promoting the GCARSIH through its networks and determining the regional eligibility of entries that were submitted. On 12 August 2022, during the Closing Ceremonies of the 15th PNHRS Week Celebration, the winners and finalists of the Gelia Castillo Award for Research on Social Innovations in Health fr the current year were announced.

The project known as ALAGA KA, or Alay sa Ginhawa at Kalusugan, has been chosen as the overall winner of the 2022 GCARSIH. The Health Futures Foundation, Inc. developed ALAGA KA with the goal of bringing healthcare to underserved areas by constructing fully functional, future-proof, and equipped barangay health stations (BHS).

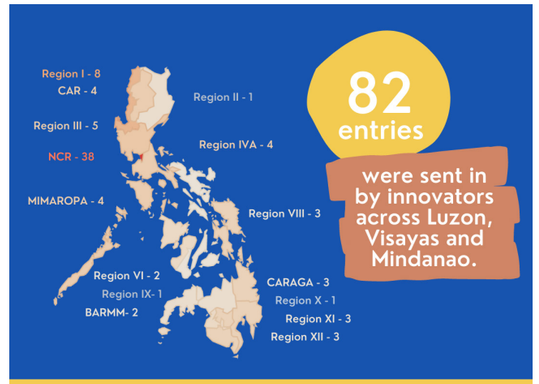
With assistance from the governmental and commercial sectors, the project team develops the BHS infrastructure, teaches local healthcare providers, and creates community-based health and wellness initiatives. In Batangas, Palawan, Samar, Northern Samar, and Eastern Samar, ALAGA KA has handed over 23 barangay health stations thus far.

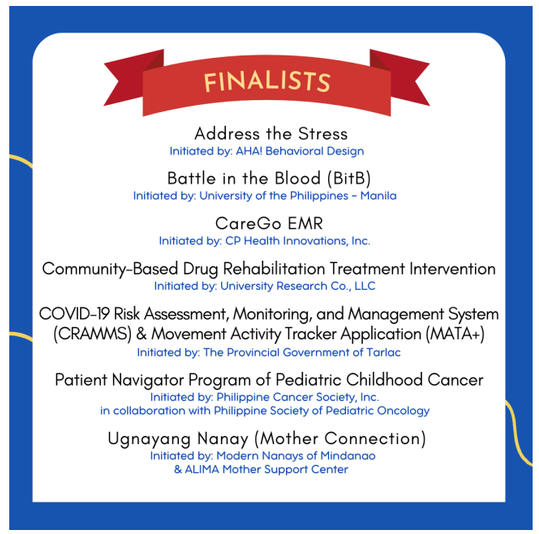
Other GCARSIH awardees include:

- Second Place: Culion Health, run by the Culion Foundation, came in second place for its network of contracted TB clinics; and
- Third Place: The UP Surgical Innovation and Biotechnology Laboratory (UP SIBOL) Program, for its joint effort on the production of complex, precise medical equipment.

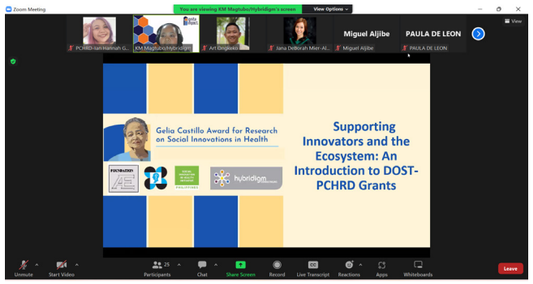
In addition to the winners, the Award recognized seven finalists:

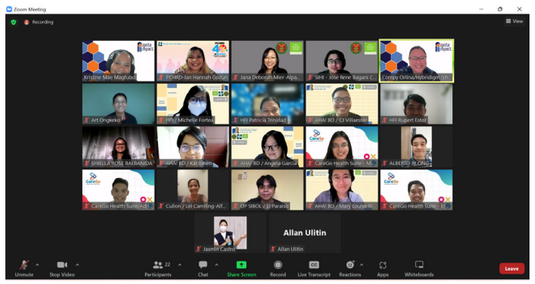
- Address the Stress: Mental Health 'Nudges' for Healthcare Workers' Wellbeing During the COVID-19 Pandemic by AHA! Design for Behavior;
- Battle in the Blood (BitB), the University of the Philippines Manila's first HIV gaming app;
- CP Health Innovations, Inc.'s CareGO EMR, a vaccination management app;
- University Research Co., LLC's Community-Based Drug Rehabilitation Treatment Intervention;
- CRAMMS and MATA+: The Provincial Government of Tarlac's COVID-19 Risk Assessment, Monitoring, and Management Systems (CRAMMS) and Movement Activity Tracker Application (MATA+);
- Pediatric Childhood Cancer Patient Navigator Program: Guiding Patients Through the Complex Cancer Care Continuum, developed by the Philippine Cancer Society, Inc. in collaboration with the Philippine Society of Pediatric Oncology; and
- Ugnayang Nanay, for enabling environment for mothers, by Modern Nanays of Mindanao and ALIMA Mother Support Center.





Training and Mentoring Package for the Winners and Finalists of the 2022 Gelia Castillo Award for Research on Social Innovations in Health (GCARSIH)





The training and mentoring package for the winners and finalists of the 2022 Gelia Castillo Award for Research on Social Innovations in Health (GCARSIH) commenced last October 29, 2022. The training sessions, which are held virtually via Zoom, ran for seven (7) weeks until December 10, 2022.

A panel presentation for the developed research proposals was also held last December 10, 2022. The presentation simulated an evidence-based grant proposal pitch, wherein the panelists acted as fund managers and evaluated the developed proposals based on both its research merits and potential real-world benefits.

The project team will hold a culminating activity with the 2020 and 2022 GCARSIH winners, together with an Inaugural Gelia Castillo Memorial Lecture in February 2023.

Awarding of the 2021 Best Mentor in Health Research Award

The Best Mentor Award is offered biennially to recognize and reward mentors in health research. By imparting information and skills, instilling values and attitudes, and inspiring individuals participating in the research process, research mentors help in fostering an enabling atmosphere and in turn, assist in building the capacities of researchers.

The following were awarded as cluster winners of the 2021 Best Mentor in Health Research Award during the Closing Ceremonies of the 15th PNHRS week Celebration last August 12, 2022:

Undergraduate Students Category

Luzon Cluster	Rev. Fr. Alfredo V. Corpuz	University of Northern Philippines
Visayas Cluster	Ms. Carol Joy P. Remaneses	Aklan State University

Graduate Students category:

Luzon Cluster	Dr. Julius T. Capil	Cagayan State University
NCR Cluster	Prof. Agnes L. Llamasares-Castillo	University of Santo Tomas
Visayas Cluster	Dr. Rheajane A. Rosales	Samar State University
Mindanao Cluster	Dr. Mylene M. Uy	Mindanao State University – Iligan Institute of Technology

Junior/Early-career researchers category

NCR Cluster	Dr. Erna C. Arollado	University of the Philippines Manila
Visayas Cluster	Dr. Jonel P. Saludes	University of San Agustin

The National Winners for each category were then selected among the Cluster Winners. The following are awarded as the National Winners:

National Winners

Undergraduate Students Category	Rev. Fr. Alfredo V. Corpuz
Graduate Students Category	Prof. Agnes L. Llamasares-Castillo
Early-career or junior researchers Category	Dr. Erna C. Arollado

Rev. Fr. Alfredo V. Corpuz
National Winner for the Undergraduate Students Category

Prof. Agnes L. Llamasares-Castillo
National Winner for the Graduate Students Category

Dr. Erna C. Arollado
National Winner for the Junior/Early-Career Researchers Category

2022 DOST-PCHRD Undergraduate Thesis Grant in Natural Products

Undergraduate students conducting a thesis on natural products may be given financial support through the DOST-PCHRD Undergraduate Thesis Grant in Natural Products. The Program's objective is to sustain a research culture in natural products to increase the number of research and, over time, develop a pool of experts in the field. The Program supports the Tuklas Lunas (Drug Discovery and Development) program of the DOST-PCHRD, which aims to develop alternative medicines that are safe, effective, and reasonably priced using the nation's natural resources.

The call for the 2022 DOST-PCHRD Undergraduate Thesis Grant in Natural Products was opened last 17 March 2022 during the PCHRD's 40th Anniversary Celebration. The search was open to all undergraduate students of Colleges of Pharmacy, Chemistry, Nursing, and Health and Allied Sciences who have thesis proposals on natural products, specifically utilizing indigenous plants in the region.

The grant was awarded to the following undergraduate students from Regions 3, 4A, 9, 10, 11, and BARMM:

Region 3

Shaira C. Gozun, Mark Kenneth S. Garcia, Alexandra Kanela M. Sarcon, Ria A. Tabas Alexis, Domini D. Taberna, Lorraine Rose Tongol, and Beatrice G. Villanueva
Angeles University Foundation
"Biological activities of natural products from endemic plants in Mount Arayat National Park (MANP) based on phytochemical screening and virtual screening of related homologs"

Jherby Kyle C. Teodoro
Nueva Ecija University of Science and Technology
"In-vitro Analysis of the Cytotoxic Activity of the Green Synthesized Silver Nanoparticles Using Stem Barks of Sandoricum koetjape n-hexane Extracts Against HCT-116 Cancer Cell lines"

Region 4A

Kristel Hope T. Villafuerte
University of the Philippines - Los Baños
"Biological Activities of Kombucha-Like Functional Beverage from Insulin Plant (Costus igneus N.E.Br.) Leaf Tea"

Aaron R. Arasa, Hannah R. Natividad, and Kemp Christine C. Sotelo
Southern Luzon State University
"Phytochemical and Pharmacological Profile of Tea Extracts from Orthosiphon aristatus (Blume) Miq."

Region 9

Binladen M. Daiman, Al-Ahmad B. Jaiyari, and Prinze Rhadeen A. Kibong
Western Mindanao State University
"Antioxidant, Phytochemical and Cytotoxic Screening of Cocoa Pod Husk (CPH) Extracts used as Herbal Tea"

Region 10

Prince Eroll V. Reyes, and Emerson Paul D. Somontan
Iligan Medical Center College
"Radioprotective Effects of Purple Yam (Dioscorea alata L.) Tuber and Leaf Extracts on Genotoxicity Induced by X-rays in Human Peripheral Blood Lymphocytes"

Aaron L. Degamon
Mindanao State University - Iligan Institute of Technology
"Diabeathis": In vitro screening of Clitoria ternatea ("blue ternate"), Ficus septica ("Lagnob"), Heliotropium indicum ("Elepante'), and Costus igneus ("Insulin plant") as potential source of Anti-diabesity agents"

Region 11

Raffy D. Cañeda
University of Southeastern Philippines
"Antibacterial and mutagenic activities of bioactive metabolites in the associated fungal endophytes of Lagnub (Ficus septica Burm.) against Methicillin-Resistant Staphylococcus aureus"

Joshua M. Cambronero
University of the Philippines Mindanao
"Antioxidant and anticancer properties of Moringa oleifera Lam stalk and stem bark extracts obtained by maceration and ultrasound-assisted extraction"

BARMM

Alyana-Tajma Romato, and Rohaina Bayena
Mindanao State University-Main Campus
"Anti-hyperglycemic Effect of Torenia fournieri Linden ex. E. Fourn. in Alloxan-Induced Albino Mice"

Oral Research Paper Presentation Competition for the Grantees of the DOST-PCHRD Undergraduate Thesis Grant in Natural Products

The Oral Research Paper Presentation Competition for the 2019 and 2021 Grantees of the DOST-PCHRD Undergraduate Thesis Grant in Natural Products took place via Zoom on August 9, 2022.

The following winners were awarded on 12 August 2022, at the closing ceremonies of the 15th Philippine National Health Research System (PNHRS) Week Celebration:

1st place	Jason C. Alcano	Central Mindanao University
2nd place	Wenzel E. Perian	Western Mindanao State University
3rd place	Jerson Angelo Armecin	Velez College Philippines

Jason C. Alcan
(1st Place)

Wenzel E. Perian
(2st Place)

Jerson Angelo Armecin
(3st Place)

REGIONAL HEALTH RESEARCH AND DEVELOPMENT CONSORTIA AND REGIONAL RESEARCH FUND

Regional Health Research and Development Consortia (RHRDC)

In line with the thrust of developing and encouraging institutional research activities, and in the interest of equity, the Council organized the Regional Health Research and Development Consortia (RHRDCs).

The Consortia serve as the structures through which institution development programs are to be implemented and as a mechanism to encourage and promote health research activities in the regions.

The Council's institutional development package in the regions includes administrative support for the operations of the RHRDCs, as well as support for the critical components of the research management program.

Institution development programs of the Council have zeroed in on institutions with existing potentials for health research activities, and in the establishment of regional systems through the Consortia.

In 2022, the DOST-PCHRD supported 16 RHRDCs through its Grants-in-Aid Program.

Encouraging beginning researchers to be involved in health research activities without competing with experienced researchers.

Regional Research Fund

Beginning researchers are given support to enhance their skills in conducting health research aligned with NUHRA or the Regional Unified Health Research Agenda (RUHRA) through the Regional Research Fund (RRF) Initiative.

The Regional Research Fund (RRF) initiative aims to encourage beginning researchers to be actively involved in health research activities without competing with experienced researchers. Under the RRF initiative, beginning researchers can then gain experience that will improve their competency in designing, implementing, and managing health research projects. Once the researcher was able to establish a good track record, he/she will then be encouraged to apply for the larger scale research project/program grants also available in DOST-PCHRD, DOST, Department of Health (DOH), Commission on Higher Education (CHED), and other national and international funding agencies.

For 2022, the DOST-PCHRD monitored seven new and 42 ongoing projects. A total of four projects were also completed for the period.

Newly-approved RRF Projects in 2022

Epidemiology of Zoonotic Toxoplasma gondii Infection Among Household Cats in Region X
Dr. Kassey Alsylle Talle Dargantes
Central Mindanao University

Exploring Antimicrobial Medicinal Plants used by Indigenous Natives in Two Mountain Ecosystems of Bukidnon, Philippines (EXAMINE Bukidnon)
Dr. Mark Lloyd G. Dapar
Central Mindanao University

The Lived Experiences of COVID-19 Survivors in Northern Mindanao
Dr. Lourlyn P. Mansaguiton
Mountain View College

Development of a Cost Effective HPLC-FLD Analytical Method for the Quantification of Residual Fluoroquinolones in Chicken and Pork
Dr. Erwin Oliver V. Fundador
University of the Philippines Mindanao

LIMPIO: Lessening Infestation of Microbes and Parasites through Interventions in Open-field farms in Marilog District, Davao City
Dr. Aleyla E. de Cadiz
University of the Philippines Mindanao

Water Quality Assessment and Evaluation of Human Health Risk in Selected Rivers of Lanao del Sur, Philippines
Dr. Annabella G. Villarino and Prof. Nourshamsia C. Barosa,
Mindanao State University Main - Marawi Campus

Physical Activity of the Elderly in the 4th District of Leyte amidst COVID-19 Pandemic
Ms. Maria Elisa A. Caberos
Palompon Institute of Technology

Predictors of Clinical Outcomes of COVID-19 Confirmed Adult Patients Hospitalized in Eastern Visayas Medical Center
Dr. Jose Carlo K. Del Pilar
Eastern Visayas Medical Center

Quantification of Antibiotic Resistance Genes of *Enterobacteriaceae* from an Organic Farm and their Products in Benguet

COMPLETED RRF PROJECTS IN 2022

Quantification of Antibiotic Resistance Genes of *Enterobacteriaceae* from an Organic Farm and their Products in Benguet

Dr. Roland M. Hipol
University of the Philippines-Baguio

One of the most prevalent problems faced by rural farmers in the country is antibiotic resistance contamination in upland farming. This research aims to assess the prevalence of antibiotic resistance genes of *Enterobacteriaceae* isolated from an organic farm and their products as well as identifying the foodborne pathogens present in an organic farm and their products.

The study used molecular techniques to amplify and detect DNA in order to identify the isolated bacteria and identify the genes responsible for antibiotic resistance. Utilizing ImageJ software, the relative quantification of the antibiotic resistance genes was carried out, and the information produced by this research will be useful to the local farmers. Owners of organic farms can take the necessary precautions to reduce the spread of these infections.

Completed in June 2021, the project was able to isolate resistant bacteria from poultry manure, soil, and from the leaves of the vegetables that were planted on the farm at Longlong, La Trinidad, Benguet. Five species belonged to the *Enterobacteriaceae* family, most of which were *Bacillaceae* representatives. The results of this study are significant because they offer a peek at the level of antibiotic resistance contamination on a farm in Benguet, which may also be the situation on other farms in the area using the same upland farming techniques.

Farm owners will have a view of the impacts of excessive use of antibiotics which can serve as a guideline in reducing antibiotic administration in livestock. Local health officials can utilize the information acquired to disseminate information on health risks, while LGUs can use it to develop policy directives for encouraging a healthier environment and ensuring food safety.

In vitro and In Vivo Anti-hypercholesterolemic activity of *Alocasia macrorrhiza (Araceae)* and its Food Products

Darwin A. Garbeles
Partido State University

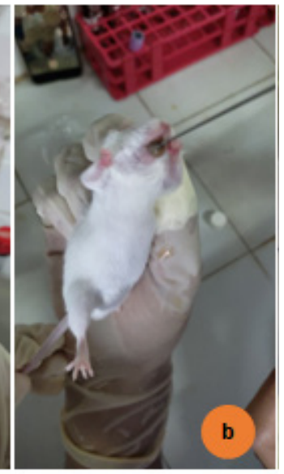
According to the World Health Organization (2016), three-quarters of CVD deaths take place in low- and middle-income countries like the Philippines. Therefore, there is a great need for the development of innovative treatments from natural sources and food from underused crops that have fewer negative side effects than current pharmaceuticals.

The study generally aimed to evaluate the anti-hypercholesterolemic activity of the crude extracts and food products from the corms of *Alocasia macrorrhiza*.

Upon completion of the project, the data on the anti-hypercholesterolemic activity of *A. macrorrhiza* has been fully gathered and analyzed. The key findings are as follows: 1. *A. macrorrhiza* showed high phenolic and flavonoid content in ethanolic solution than aqueous solution; 2. *A. macrorrhiza showed* inhibition of HMG-CoA Reductase confirming its anti-hypercholesterolemic potential. However, its inhibition is lower than the commercial drug pravastatin; 3. *A. macrorrhiza* showed anti-hypercholesterolemic potentials by lowering the levels of triglycerides, high-density lipoprotein (HDL), low-density lipoprotein (LDL), very-low-density lipoprotein (VLDL), and total cholesterol of hypercholesterolemic mice models.

The project was able to provide nutritional and pharmaceutical validation of *A. macrorrhiza* corm extract and food products. The study will augment the importance of this underutilized plant material which is found endemic in the Bicol Region.

Through the Council's RRF program, Partido State University served as the implementing agency, while the Bicol Consortium for Health Research and Development (BCHRD) and the Department of Science and Technology-V (DOST V) served as the monitoring agencies for the implementation of this project.



Ultrastructural Characterization of Snail-associated Digenic Parasites in Rice fields Surrounding Lake Mainit, Philippines

Dr. Joycelyn C. Jumawan
Caraga State University

The project aims to identify digenic parasites isolated from snails and bovine feces through ultrastructural characterization. Specifically, the study aims to: 1) Provide an updated inventory of gastropods inhabiting rice fields of Lake Mainit; 2) Isolate digenic parasites from snails and bovine feces from the identified areas; and 3) Prepare isolated parasites for light and scanning electron microscopy. The study will also determine the prevalence of *Schistosoma* infection in rice fields adjacent to Lake Mainit by collecting *Oncomelania hupensis quadrasi* snails and bovine fecal samples which are then subjected to laboratory examination and analysis.

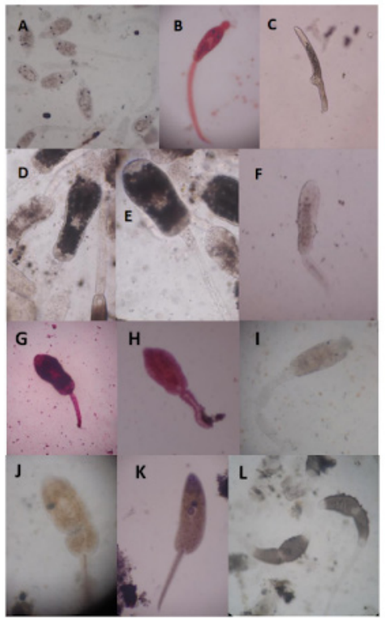
Completed on 20 June 2022, this project was implemented in the following target sites surrounding the Lake Mainit rice fields of Brgy Cuyago in Jabonga, Agusan del Norte, Brgys Alipao and Poblacion in Alegria, Surigao del Norte, and Barangays San Isidro, Magpayang, and Matinao in Municipality of Mainit, Surigao del Norte.

The results formulated an updated inventory of snails (9 species) in relation to the soil and water characteristics of the rice field. A research article regarding this is already undergoing peer-review for publication. 100% of the parasites from snail individuals and bovine feces were also isolated from the rice field stations. Seven (7) parasites were documented from bovine feces from the six (6) rice field stations. Incidences of multiple parasite infections in bovines from rice fields adjacent to Lake Mainit were also observed. Eight (8) digenic trematodes from snails were identified, and seven (7) of these are first reported in the Philippines. Soil and water features of the rice fields of Lake Mainit were characterized, and its physicochemical parameters were analyzed. An article regarding this is also under review containing the major findings. ITS sequences from isolated cercaria were already deposited in GenBank, and a paper was published in two (2) journals – the Journal of Parasitic Diseases and the Asian Journal of Biological and Life Sciences.

Establishment of study stations with the participants

GPS tracking for generation of study map

Sorting, Screening, and Identification of Gastropods and cercarial load



Cercarial fauna from gastropod species in selected ricefields of Lake Mainit, Philippines. A. Pleurolophocercous cercaria; B, H, K. Echinostome cercaria; C. Mutabile cercaria; D-E. Gymnocephallus cercaria; F, G, I, J.- Xiphidiocercaria; L. Gymnocephallus. Viewed under Low Power Objectives (100x). Some were stained with aceto-carmine.

Factors Associated with Acceptability of Mass Drug Administration for Morbidity Control of Schistosomiasis

Ms. Nathalie C. Fat
Father Saturnino Urios University-College of Nursing

This study found that providing data on the behavioral impact of Mass Drug Administration in Schistosomiasis endemic areas of Butuan City will provide a foundation for enhancing advocacy and health promotion and education efforts that will help increase MDA coverage for more effective morbidity control.

The project aims to describe the Mass Drug Administration for Schistosomiasis management in Butuan City, to determine the profile of the respondents, to identify factors associated with Mass Drug Administration to help achieve target coverage for morbidity control, to determine the level of acceptability of Mass Drug Administration for morbidity control in Schistosomiasis, and to determine the correlation between the profile of the respondents and the factors described.

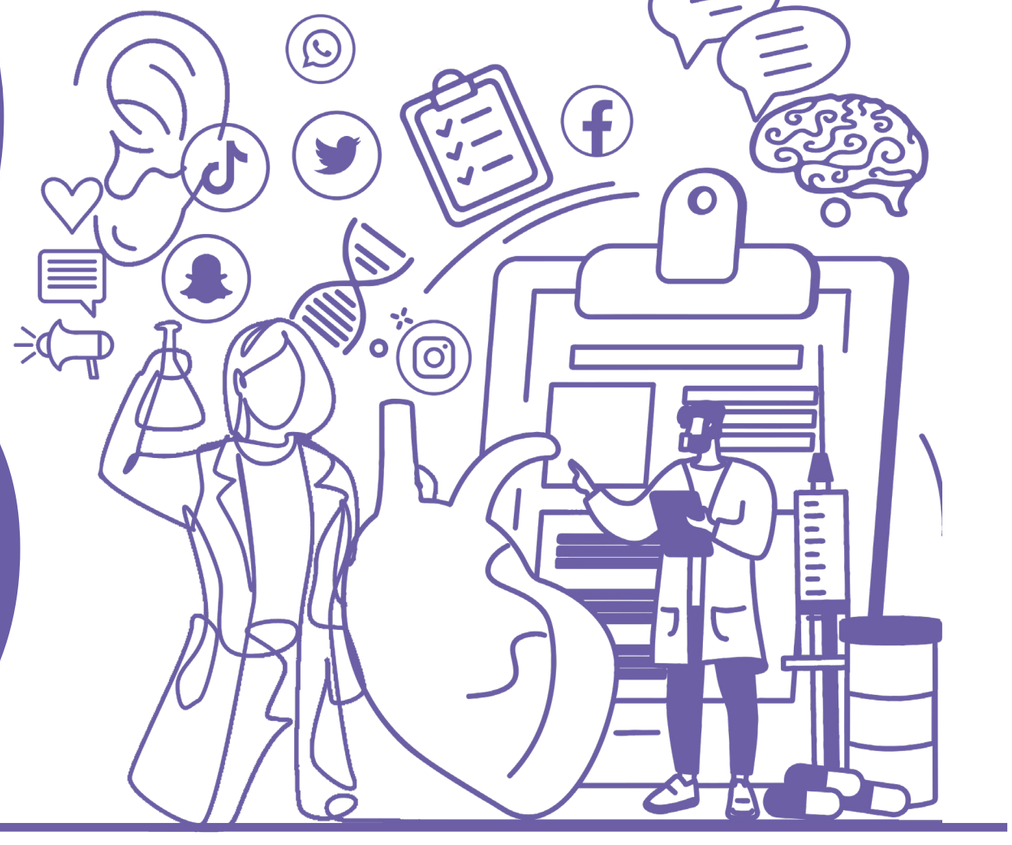
The project's continuation assisted the researcher in conducting research with the goal of providing substantial research-based data or information about health, specifically in factors associated with the acceptability of mass drug administration for schistosomiasis in the COVID-19 context in Butuan City, Philippines.

The output of the research project will provide data or information on the ground to the Department of Health, Butuan City Health Office, Public Health Nurses and Midwives, and schistosomiasis endemic communities regarding the implementation of one of the schistosomiasis controls and elimination strategies during the COVID-19 pandemic. Because it used a mixed method of research, the study's findings are applicable to a larger group of people in similar situations.

PART 3

RESEARCH UTILIZATION

PCHRD supports translation of research to policy to deepen public understanding, and engages stakeholders in the research dissemination processes. It also advances technology adoption by guiding researchers, technology transfer officers and industry partners as they go through each step of idea generation to utilization.



COMMUNICATION ACTIVITIES

Support to Research Dissemination

The Council supports projects and activities on research dissemination, including, but not limited to support to publication, paper presentation, and events.

In 2022, the Council approved twelve (12) requests for Support to Research Dissemination (SRD) of which five were requests for publication, four for scientific events, two for paper presentation, and one for material development.

A total of 3.18 million pesos were provided for this program.

TALAKAYANG HeaRT BEAT
HEALTH RESEARCH AND TECHNOLOGY

Talakayang Health Research and Technology (HeaRT) Beat

The Talakayang HeaRT Beat (THB) is a press conference series launched by the DOST-PCHRD in 2019 to share the latest updates in health research and to facilitate dialogues between health research stakeholders, the media, and the greater Filipino community. The name HeaRT Beat stands for Health Research and Technology Beat. The conference has been a platform for our local scientists to share exciting developments on their projects and experiences. This year, 11 sessions (10 virtual and 1 hybrid) of THB were organized by PCHRD.

Date	Topic	No. of Viewers/ Participants	Facebook in-sights	Participant's Event Rating
26 January	Health Research Awards	114 - Zoom 895 - FB	2,213- Reach 62- Engagement	97.60% rated very satisfactory and higher
24 February	Tuberculosis Research	153 - Zoom 999 - FB	2,494-Reach 65-Engagement	100% rated very satisfactory and higher
31 March	Fellowship in Epidemiology	112 - Zoom 980 - FB	1,693- Reach 86- Engagement	92% rated very satisfactory and higher
20 April	Prospective Urban and Rural Epidemiologic (PURE) Study	106 - Zoom 1159 - FB	2,363- Reach 105- Engagement	100% rated very satisfactory and higher
17 June	eHATID	113 - Zoom 2941 - FB	10,,564- Reach 506- Engagement	97.30% rated very satisfactory and higher
24 June	Startup Research Grant	148 - Zoom 857 - FB	2,071- Reach 49 Engagement	97.60% rated very satisfactory and higher
28 July	Regional Research Fund	49-Zoom 810-FB	2,444-Reach 80-Engagement	97.14% rated very satisfactory and higher
16 September	Prospective Urban and Rural Epidemiologic (PURE) Study Session 2	106-Zoom 632-FB	1,799- Reach 55-Engagement	94.32% rated very satisfactory and higher
29 September	Telehealth R&D	135-Zoom 930-FB	2,988-Reach 89-Engagement	94.9% rated very satisfactory and higher
28 October	Undergraduate Thesis Grant on Natural Products	72-Zoom 806-FB	2,228-Reach 85- Engagement	100% rated very satisfactory and higher
25 November	Biomedical Devices Engi-neering for Health	52-Face to face attendees 27,417- FB	864- Reach 72- Engagement	96.30% rated very satisfactory and higher

Make your life better: A digital campaign

12.3M Campaign Reach

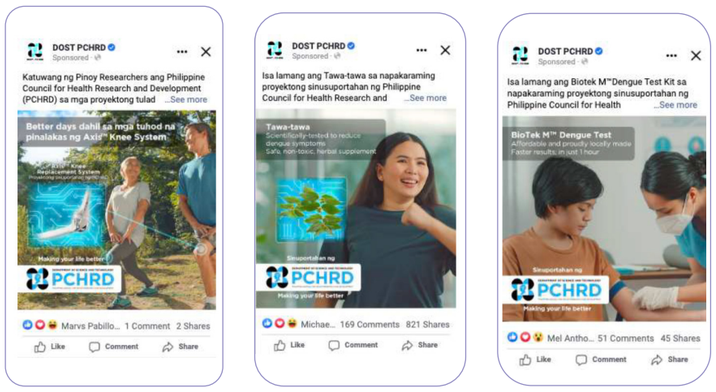
35.11 Campaign Impressions

3.03M Campaign Video Views

56K Post Reactions

1.3K Post shares

2.3K Link clicks



For the first time, the DOST-PCHRD implemented a digital campaign entitled, "Make your life better," to increase awareness about the DOST-PCHRD and its role and contribution in the field of health research that positively benefited the Filipinos.

The campaign produced three video materials (30s, 15s, 6s edit down) and 5 static posters to be disseminated in Facebook. The campaign was launched during the PCHRD's 40th Anniversary celebration on 17 March 2022 and lasted until June 2022.

The overall campaign was able to reach 12, 308, 482 unique users, delivered 2, 774, 764 video views, and garnered 3, 049, 280 post engagements on Facebook.

The Reach and Frequency posts had consistent performance as seen by their ad recall lift rate. Of all the posts, it was Tawa-Tawa that resonated most with the audience given its higher lift rate at 10.37%. The post was also shared over 700 times which gave the brand exposure outside of the main target market.

All three video materials were highly watched and engaged with by the audience. View-Through Rates (VTRs) continued to be high and costs were conservative until the end.

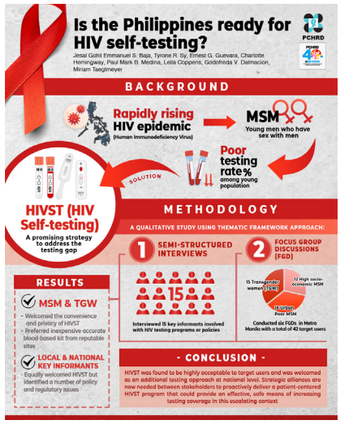
The audience continued to resonate with the promoted posts as seen by the consistent engagement rate across all posts. All posts had a significant number of shares that exposed the posts to an audience beyond the target market.

In terms of demographics, engagements consistently came from the older generation and mostly female while there's a higher chance of ad recall lift within the younger users and male audience. Almost 100% of engagements came from mobile devices.

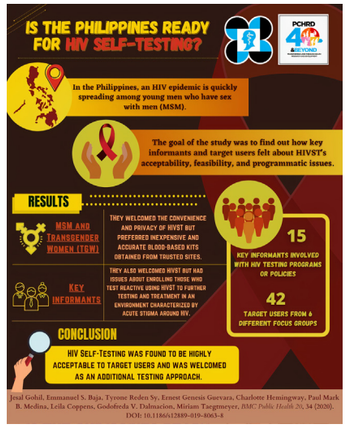
Visualize Health Research 2: Visual Abstract Contest

With the goal of reaching a wider audience in the dissemination of research results of its supported projects in Twitter and Facebook, the DOST-PCHRD conducted the Visualize Health Research 2.0: A Visual Abstract Contest. Contestants chose a research study from one of the published PCHRD-supportant projects from 2019 to 2020 and created a visual abstract.

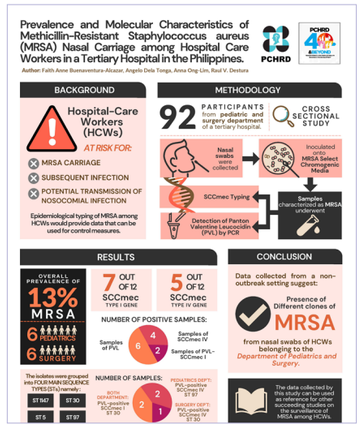
Out of more than 70 submissions, three were selected as winners of this competition.



FIRST PLACE
Angel Leah Delos Reyes Gaid
Mindanao State University-Iligan Institute of Technology (MSU-IIT)

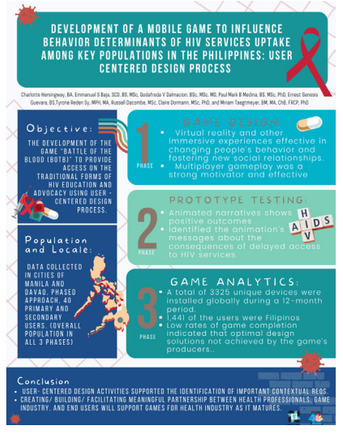


SECOND PLACE
Nicole Olive Agbuya Coquia
Saint Louis University Laboratory High School - Senior High

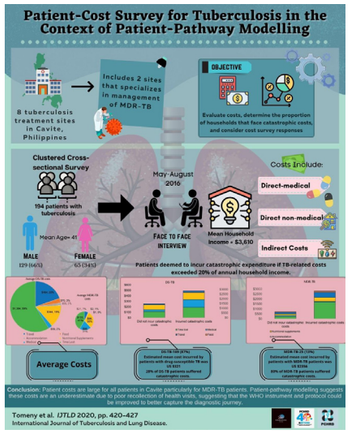


THIRD PLACE
Salma Khairia A. Alang
University of Immaculate Conception

A Social Media Contest was also launched wherein the visual abstract poster entry with the highest number of reactions and shared posts will be awarded the People's Choice Award.



PEOPLE'S CHOICE AWARD
Yoela Grace P. Baltazar
Saint Louis University



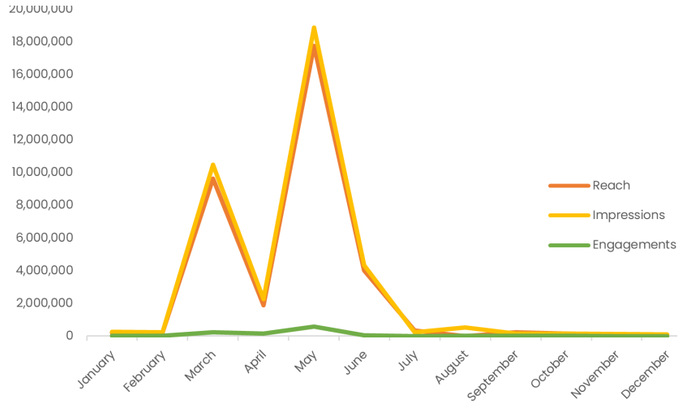
PEOPLE'S CHOICE AWARD
Rendel Icee V. Ramos
Saint Louis University Laboratory High School - Senior High

Social Media

The Council utilizes social media platforms such as Facebook and Twitter to reach more Filipinos with accurate and updated health research information.

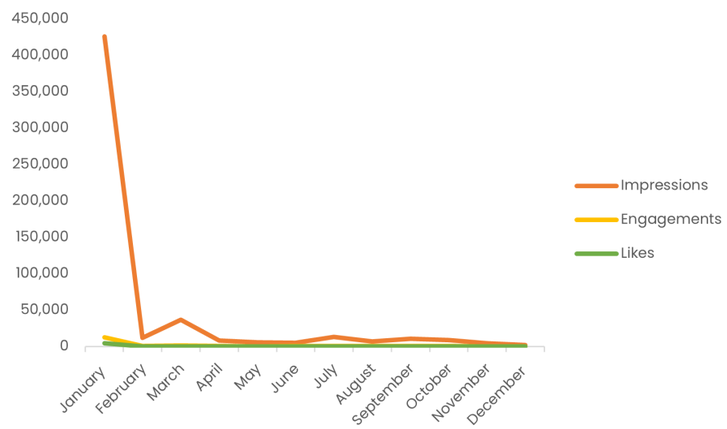
Facebook

As of Dec 2022, the DOST-PCHRD Facebook page has over 75,000 followers. We are also able to reach over 34 million users and make over a million engagements.



Twitter

As of Dec 2022, the DOST-PCHRD Twitter page has over 3,100 followers. There are a total of 500, 000 impressions and 17, 000 engagements.



Media Mileage *(January to August 2022)*

To understand how the media perceives the Council, media mileage was used as a monitoring tool to track and analyze data on all major social platforms.

TELEVISION

85 Coverages

1.6M Viewership/ Readership

RADIO

93 Broadcasts

5.6M Viewership/ Readership

PRINT

58 Appearances

61.6M Viewership/ Readership

ONLINE

306 Posts

542M Reach

Maraming Salamat po!

National Events

The National Research and Development Conference (NRDC) is a yearly activity that aims to promote coordination and collaboration among stakeholders of research and development (R&D) and innovation. It highlights ongoing and completed R&D projects and programs that are aligned to the priority areas of the Harmonized National Research and Development Agenda (HNRDA) that will be for the use or benefit of society, and those that may contribute to economic development.

With the theme "Sustaining the R&D Momentum for Prosperity and Wealth Creation," the event highlighted the role of science and technology in developing innovations to support industry, especially the micro, small and medium-sized industries (MSMEs).

During its celebration on 15 and 16 September 2022, the DOST-PCHRD presented the current updates of HNRDA for Health. Aside from this, the Council invited nine program leaders who presented their research projects at the conference, namely:

1. POWer: Mobile Biomedical Device Unit to Enhance Access to Prosthesis and Orthosis Devices
2. Shining the Light on Liver Cancer: CANDLE Study Program
3. Chemical and Biological Characterization of Pure Bioactive Compounds from Kadios (Cajanus cajan) Seeds and its Topical Formulation Studies
4. Development of Anti-inflammatory Herbal Products from Iluko Indigenous Plants (MMSU TLDC)
5. Field Implementation of a Locally Developed Diagnostic Kit for the Detection of CoronaVirus Disease-2019 (COVID-19)
6. Relationship of Body Composition to the functional Capacity and Quality of Life of Older Filipinos in Selected Provinces in the Philippines
7. Two-stage, Randomized, double-blind, placebo-controlled clinical trial on the efficacy and safety of Lagundi (Vitex negundo) tablets/syrup (NIRPROMP formulation) with standard treatment compared to placebo with standard treatment in patients with mild COVID -19 disease without comorbidities
8. CRISPR-based Diagnostics (CRISPR-Dx) for the Detection of SARS-COV2 and TB
9. eHATID (Android-based electronic medical record system for LGU)

7th National Research and Development Conference (NRDC)

2022 NATIONAL SCIENCE & TECHNOLOGY WEEK

Agham at Teknolohiya:
Kabalikat sa Maunlad
at Matatag na Kinabukasan

23-27 NOVEMBER 2022
Exhibits at the World Trade Center
Seminars via online platforms

NSTW.DOST.GOV.PH NSTWDOST

#2022NSTW #DOSTKABALIKATMO #SCIENCEFORTHEPEOPLE #ONEDOST4U

National Science and Technology Week (NSTW)

After two years of online celebrations, the face-to-face conduct of the National Science and Technology Week (NSTW) was held on 23-27 November 2022 with the theme "Agham at Teknolohiya: Kabalikat sa Maunlad at Matatag na Kinabukasan."

President Ferdinand "Bongbong" Marcos Jr. graced the celebration as keynote speaker during its Opening Ceremonies where he expressed support for the Philippine S&T community.

With the theme "Pananaliksik Pangkalusugan: Tugon sa Pangangailangan ng Kinabukasan," the DOST-PCHRD led the 2022 NSTW Health Cluster Exhibits.

Along with several participating agencies, the exhibit showcased health-related research technologies and projects. Among the Council-supported projects displayed are the Biotek M Dengue Aqua Kit by Manila HealthTek Inc., the Cementless Hip Replacement System by Orthopaedic International Inc., the LISA Robot by the University of Santo Tomas, and more.

Over 2725 attendees visited the Health Cluster exhibit.

DOST@64: Gabi ng Parangal at Pasasalamat

The Council participated in the DOST@64 Gabi ng Parangal at Pasasalamat, an activity under the Department of Science and Technology's 64th Anniversary.

Held on 13 June 2022 at the Sofitel Philippine Plaza Manila, the event recognizes lead partners of DOST in the various sectors, including health for their significant contributions towards the advancement of Science and Technology in the country.

During the awarding, the Vaccine Expert Panel (VEP), a group of infectious disease experts working closely with the COVID-19 Task Group on Vaccine Evaluation and Selection headed by the DOST, was recognized for guiding the S&T sector towards safe and effective COVID-19 vaccines. In addition, DOST-PCHRD partner institutions and supported projects were also recognized for their contributions in health through research.

18th National Biotechnology Week (NBW)

The National Biotechnology Week is celebrated every year by virtue of Presidential Proclamation No. 1414. Led by the Department of Trade and Industry (DTI), this year's celebration banners the theme: "Responding to the Challenges: Business Opportunities in Biotechnology."

This year's celebration is a combination of face-to-face events held at the Philippine Trade Training Center (PTTC) and online events hosted by different agencies from November 21 to 25, 2022. In support of the NBW, the Council participated in the physical exhibit at the PTTC and hosted two webinars which highlighted PCHRD-supported projects on biotechnology.

HeaRT Report: Overcoming HIV through Biotechnology

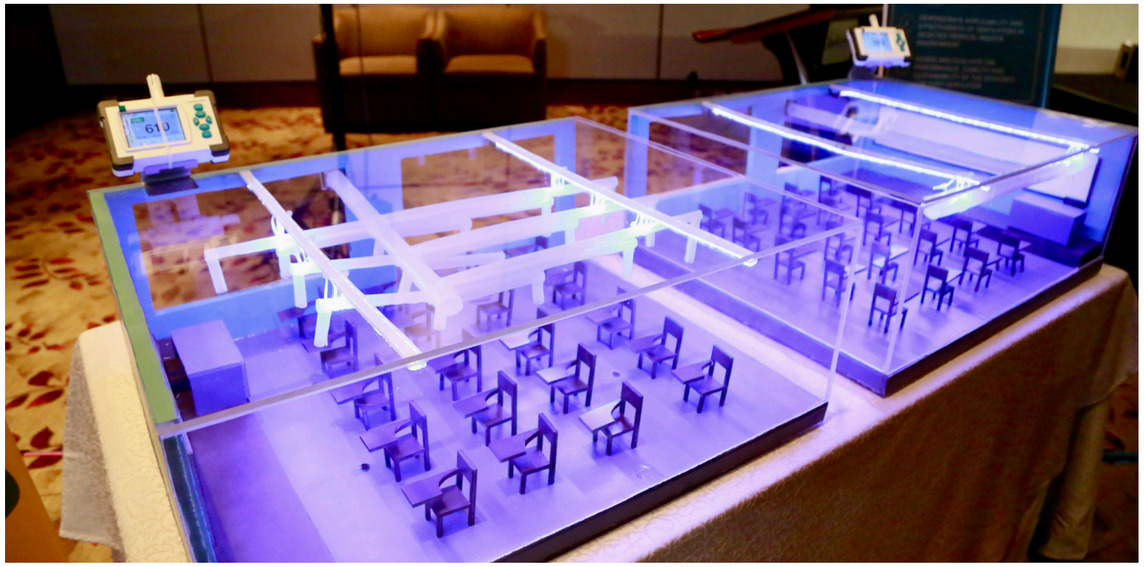
To help address the burden of HIV in the country, the DOST-PCHRD supports projects dedicated to the disease, such as generating awareness, developing diagnostic kits, and looking for possible treatment options.

Parallel to this commitment, the Council conducted the HeaRT Report: Overcoming HIV through Biotechnology webinar last 22 November 2022 via Zoom. The webinar aims to increase awareness on the current HIV situation in the country and showcase how research on biotechnology can help build the country's capacities against the disease.

HeaRTNovation: Advancing Technology Transfer in Biotechnology

Recognizing the challenges researchers face when bringing health research outputs to the market, the DOST-PCHRD supports researchers and institutions in advancing technology transfer. Led by the Council's Intellectual Property and Technology Management (IPTM) unit, several programs are implemented to support the market launch of health research outputs.

During the NBW, the Council also conducted the "HeaRTNovation: Advancing Technology Transfer in Biotechnology" webinar to provide a platform for discussion of the challenges, opportunities, and best practices researchers can adopt in commercializing biotechnology outputs.

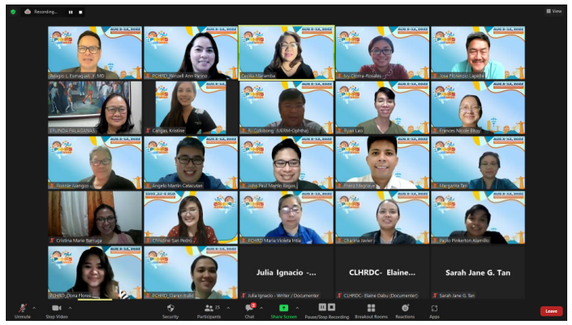


HeaRT Report: Low-Cost Ventilation System to decrease risk of COVID-19 airborne transmission

Launched to showcase the results of its supported Health Research and Technology projects, the Health Research and Technology (HeaRT) Report's first session was held on 29 July 2022 at the Radisson Blu Hotel, Cebu City.
Organized with the University of San Carlos (USC), DOST Region 7, and the Max Planck Institute for Chemistry (MPIC) in Germany, the HeaRT Report featured the DOST-PCHRD-supported project on Low-Cost Ventilation System.

Developed by Dr. Frank Helleis of the MPIC, the ventilation system is used in more than 600 schools in Germany to decrease the risk of COVID-19 airborne transmission. Following Dr. Helleis' design, the USC aims to develop a local version of the system, demonstrate its effectiveness within a tropical indoor setting, assess its performance, and evaluate the sustainability of its implementation in the Philippines.
Initial results of the project showed that carbon dioxide (CO_2) emissions go directly to the ventilation system, which decreases the risk of spreading the virus indoors. The current prototype utilizes readily-available materials such as PET sheets, cable ties, duct tape, and glue to enable easy deployment. Approximately, one unit of the prototype ventilation system is projected to cost Php 5,000, of which the cost is expected to significantly go down after negotiation with suppliers and manufacturing partners.

With the installation of the local prototype in multiple classrooms in Cebu last May, the project team is now gearing to further test the effectiveness of the ventilation system prototypes with real students during face to face classes, and assess whether the use of the ventilation system will cause any degree of discomfort among its users. Following the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 55-2020, the team will consider the following parameters: air temperature, mean radiant temperature, air speed/velocity, relative humidity, clothing insulation, and metabolic rate.



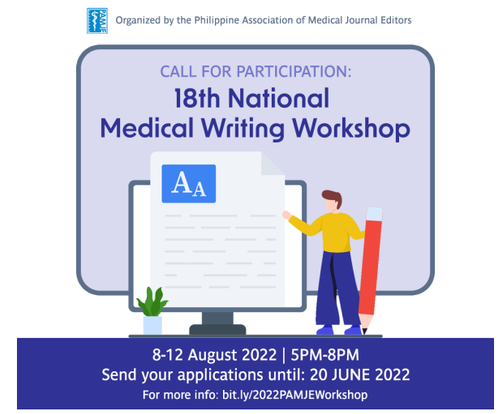
18th National Medical Writing Workshop

In partnership with the Philippine Association of Medical Journal Editors (PAMJE), the DOST-PCHRD conducted the 18th National Medical Writing Workshop on 8-12 August 2022 virtually. This writing workshop aims to help young researchers in health sciences acquire practical knowledge and writing skills in developing scientific articles for publications in scholarly peer-reviewed journals. This batch was

Among the lessons taught are structure and individual components of a scientific paper, process of preparing a manuscript, and the role of editors and peer reviewers and what they look for in a manuscript.

Under the guidance of the faculty and mentor-facilitators, the 14 participants had the opportunity to review and revise their manuscripts.

At the end of the workshop, the "Most Ready to Publish Paper Award" was given to four participants whose papers



are organized, well-written, and have the greater potential to get published in peer reviewed journals. Winners are Dr. Roger Junior C. Colobong of University of the East Ramon Magsaysay Memorial Medical Center, Mr. Ryan Christopher C. Lao of UP Manila, Dr. Franz Michael M. Magnaye of Philippine General Hospital and Dr.Margarita Katrina Amor D. Tan of Chinese General Hospital and Medical Center.

RESEARCH TO POLICY

Inputs to Policymaking

The Council participated in formulating policy recommendations and instruments to support the following legislations in 2022:

- Bills Regulating Practice of Microbiology in the Philippines
- Bills Regulating Practice of Physical Therapy in the Philippines
- Philippine Nursing Act
- Philippine Physician's Act
- Science Communication Agenda
- National Innovation Centers of Excellence for Science and Technology (NICEST)
- 2021 PIDS Survey of Innovation Activities (PSIA)
- Program/Project Leadership of S&T Fellows and Use of DOST-GIA Funds
- Promoting One Health Education in Thai Border Schools
- Senate Resolution on Pandemic Resiliency
- UHC Strategic Policy Framework and Plan
- Guidelines on the Implementation of the DOST Science and Technology (S&T) Fellows Program and its Detailed R&D Proposal
- Medical Reserve Corps
- Establishment of the Center for Disease Prevention and Control
- Virology Institute of the Philippines
- National Institute for Science and Mathematics Education Development (NISMED) Act
- An Act Establishing the Forensic Science Institute in the University of the Philippines System
- Medical Cannabis Compassionate Access Act of the Philippines
- Waste to Energy Act
- Center for Disease Control and Prevention Act
- Reduction of Indirect Cost
- Conceptual Zero Draft of WHO

22
policy inputs in 2022

Introduction to Evidence-Informed Policymaking for Health: 3rd DOST-PCHRD Webinar/Workshop for Early-Career Researchers (HIV)

Evidence-informed policy-making is the application of the best available research to support policy formulation and decision-making (WHO). On the one hand, it involves the systematic generation, translation and dissemination of knowledge and information from research, ensuring that facts and evidence are made available in a timely and useful manner. However, on the other hand policy-making is an inherently political process involving various actors, competing interests, limited time and resources, and other political considerations. A basic understanding of the political economy, e.g. the relationships between individuals, government, and public policy, provides a lens that can empower researchers to effectively navigate this environment and advocate to decision-makers and the wider community of stakeholders.

The goal of the webinar is to cover the basics of translating research into policy and equip researchers with a better understanding of the research ecosystem specific to HIV.

The webinar was opened to the public via social media and geared towards college and graduate school students, health researchers, research managers, health program managers, health advocates, and others who may be interested in evidence-informed policymaking in HIV. The webinar was broadcasted live thru DOST-PCHRD's Facebook page where it had a cumulative view of 675, Facebook reach of 1,520, and a total of 95 Facebook Engagement as of 30 May 2022. Additionally, the Zoom webinar had a total of 361 participants.

Introduction to Evidence-Informed Policymaking for Health: 3rd DOST-PCHRD Workshop for Early-Career Researchers

In its third year, the DOST-PCHRD webinar and workshop series for early-career researchers was envisioned to provide a platform for capacity and community building among the country's health science researchers and contribute to strengthening the Philippines' policy environment for health. The overall objective of the workshop series is to raise awareness and understanding among research stakeholders of the contribution of evidence to policy making, build the capacity of early-career researchers to effectively advocate for evidence-informed policymaking at different levels of government, and provide opportunities for co-learning and mentoring.

Held last 27-29 July 2022 at the Philippine International Convention Center (PICC), Pasay City, Manila, the workshop had a total of 15 early-career researchers from the Luzon Cluster. On the other hand, the three-day workshop for Visayas and MIndanao clusters was conducted last 16-18 November 2022 at Seda Hotel, Iloilo City. The workshop had a total of 14 early-career researchers.

The workshop included presentations on the fundamental concepts underlying the political economy of health, the application of strategic communication for policy advocacy, and examples of best practices for evidence-informed policymaking. The participants were able to recognize the role of political factors and effective communication in translating research outcomes into policy.

Aside from the lectures, the participants had the opportunity to participate in the small group mentoring led by the workshop directors to support them in the development of their policy advocacy road maps and "pitch" to policy makers. The participants also had the privilege of meeting a local policymaker for a roundtable discussion on the dynamics of policymaking at the LGU level.

3-Minute Pitch to Policymakers' Competition

A successfully completed health research study, especially with substantial results, must be communicated to policymakers and key stakeholders to empower decision making. It is important for researchers to know how to communicate research findings to inform and share evidence to policy makers. This activity aims to serve as an exercise and cultivate researchers' academic, presentation, and research communication skills to influence policy.

Held during the 15th PNHRS Week last August 10, 2022, nine participants from the Regions: 1, 2, 3, 4-A, 6, 9, 11, 12 and CARAGA presented their completed research in a three-minute, one-slide presentation to a non-specialist audience. The winners of the competition were:

3MP Winners (15th PNHRS Week)

1st Place	Dr. Marjorie Nolasco	Region 3
2nd Place	Prof. Jennifer Luyun	Region 2
3rd Place	Dr. Benneth Mercado	Region 12

HeaRTNovation | Intellectual Property and Technology Management

The Council aims to ensure that health research outputs will be essentially used to help the Filipino people with their daily lives. The PCHRD guarantees this through its technology transfer arm, the Intellectual Property and Technology Management (IPTM), which oversees the utilization of health research outputs generated from research projects that are either funded or monitored by the Council.

With this, the IPTM developed the HeaRTNovation that would ensure that these health research outputs are protected, assessed, and eventually utilized/commercialized properly. In 2022, the IPTM was also awarded funding support amounting to P2,621,828.00 for the HeaRTNovation Hubs Program, which will be formally launched in 2023.

This year, the PCHRD rebranded its technology transfer initiatives into an umbrella program called HeaRTNovation. HeaRTNovation monitors the development of health research outputs and provides support for each step of the technology transfer process.

Programs under HeaRTNovation

IPROTECH

Intellectual Property Protection and Management of Health Research Outputs

TEKI in Health

Technology Transformation and Empowerment of Knowledge Generators and Innovators in Health PrograM

SGP

Startup Research Grant Program

47.82 million

total expenditures in 2022

STATUS OF PROJECTS

- 8 NEWLY-APPROVED
- 11 COMPLETED
- 24 ONGOING
- 34 PROPOSALS PROCESSED

Impacting Every Juan's Health through Technology Transfer (Phase 2):

Building a stronger market-ready IP Portfolio from UP Manila DOST-Funded Technologies

Impacting Every Juan's Health through Technology Transfer is a PCHRD-funded project that aims to strengthen UP Manila's IP portfolio of DOST-supported health technologies in preparation for technology transfer. It was approved for implementation for a period of 15 months (approved duration: January 2022 - December 2022; 1st approved extension: January - March 2023).

The University of the Philippines Manila - Technology Transfer and Business Development Office (UPM-TTBDO) leads the monitoring, utilization, and commercialization of health technologies generated by UPM researchers.

In 2022, the team's key achievements under the project are as follows: (1) 1/1 journal article published; (2) 3/3 PCT applications filed; (3) 2/5 local patent applications filed; and (4) 9/10 business plans drafted.

In line with the project, UPM-TTBDO intends to strengthen UPM's IP portfolio by prosecuting the registration of the IP applications filed from their Phase 1 project, subjecting market-ready health technologies under IP valuation and freedom-to-operate (FTO) search, enhancing their respective business plans, and filing additional health technologies that need immediate IP protection. These activities form part of UPM-TTBDO's overall plan of bringing UPM-generated health innovations in the market.

The project has an approved budget amounting to PhP 4,950,799.84 and is currently implemented by the University of the Philippines Manila - Technology Transfer and Business Development Office (UPM-TTBDO) under the leadership of Dr. Bienvenido S. Balotro.

TEKI IN HEALTH University Innovation Fellows (UIF) for Health

The University Innovation Fellows (UIF) for Health is a PCHRD-funded project that intends to establish and implement a tailored training program in entrepreneurship and innovation leadership for researchers of health-based technologies. Specifically, UIF for Health is a training program that aims to assist health innovators in bringing their health technologies to the market.

This program is based on the combined essential components of the Filipinnovation Entrepreneurship Corps (FEC), UP Siklab (Saliksik Laboratory), and UPSCALE Innovation Hub's best practices. FEC is an experiential lean startup training program designed to help researchers determine the commercial readiness of their research projects through customer discovery and research validation.

Key accomplishments of the project team this year include the following: (1) drafted 4/4 prior art search reports, (2) drafted 5/4 freedom-to-operate reports, (3) developed 7/7 minimum viable products (MVPs), (4) created 11/7 health venture teams, (5) conducted 34 industry mentor interviews, (6) delivered 11 pitch presentations to industry, and (7) facilitated 4/4 research service agreements (RSAs) with industry partners, all of which are undergoing approval.

Similar to FEC, Siklab also uses the principles of customer discovery and industry interviews.

Siklab, in addition, incorporates Intellectual Property and Technology Transfer principles. UPSCALE offers capacity-building workshops and mentorship to early-stage technology startups. It also provides networking, investment and grant facilitation, coworking space and back office support, and access to university facilities, expertise, and equipment. In addition, UIF for Health also covers topics on regulatory processes/FDA approval requirements and spinoff mentoring.

The TEKI IN HEALTH - University Innovation Fellows (UIF) for Health project was approved for implementation for a period of 21 months (initial duration: Sept 16, 2021 – Sept 15, 2022; 1st approved extension: Sept 16, 2022 - Dec 15, 2022; 2nd approved extension: Dec 16, 2022 - June 15, 2023). It has a budget amounting to PhP 4,995,654.40 and is currently implemented by the University of the Philippines Diliman - UPSCALE Innovation Hub under the leadership of Dr. Luis Sison.

Startup Research Grant Program

Enhancement of the Design and Field Testing of an electronic referral (e-Referral) system for Service Delivery Networks (SDNs) in support of UHC

In 2019, the UHC law was signed as a government mandate to ensure that every Filipino shall receive a full spectrum of health services and affordable health benefits.

Among the features of the UHC Law are the expansion of population, service, and financial coverage through an array of health system amendments (DOH, 2019). Considering the breadth and challenges in coordination and patient referrals to various health offices, evidence-based studies on the effectiveness of electronic referral (E-Referral) systems to improve the communication between primary care and specialists is highly relevant to support the provisions of the UHC law.

In 2015, the National Telehealth Center (NTHC) of the University of the Philippines Manila implemented an initial prototype of an E-Referral system in the Community Health Information Tracking System (CHITS) EMR called the "Mag-Ina Telereferral System (MInTS)."

The project supported by PCHRD aims to design and develop a two-way electronic referral system for service delivery networks (SDNs) in support of Universal Healthcare (UHC) to improve the initial E-Referral system prototype and expand its use-case to facilitate referral of emerging and re-emerging communicable and non-communicable diseases. This will improve and streamline the communication among primary care physicians, specialists, and health providers involved in a patient's care.

The Pivotal Peak Digital Health Solutions, Inc. (PPDHSI) won the Best Startup of the Year Award in the Health Sector during the 64th DOST Anniversary.

Based on the study's results, the evidence-based studies on the effectiveness of eReferral systems to improve communication between primary care and specialists is encouraging.

The PPDHSI was the first spin-off company of the UP Manila, and the licensee of the Community Health Information Tracking System (CHITS). The R&D team is led by the CEO, Mr. Arturo M. Ongkeko, a registered nurse by profession and was awarded with Distinction in Academic Excellence as a

Fulbright and CHED scholar.

Dr. Miguel Sandido Albije serves as the project manager. He is a mechanical engineer and a physician from the UP College of Medicine. DOST-PCHRD has provided funding support to the startup company, as well as opportunities to join and be featured in international networking sessions with investors both from the Philippines and foreign countries.

HeaRTNovation Portfolio

The HeaRTNovation Portfolio highlights the Council's highly valued health research outputs from health research partners and institutions that showcases PCHRD-supported technologies which are ready for adoption, pre-commercialization and full-commercialization.

This year, there are 41 technology briefs uploaded in PCHRD's HeaRTNovation innovation portfolio and a total of 52 intellectual property (IP) applications were filed to the Intellectual Property Office through funding support from the Council.

HeaRTNovation Talent Development and Information Dissemination

The IPTM unit regularly conducts capacity building and information dissemination activities. In 2022, there were eight Capacity Building/Training and eight Info Dissemination activities conducted by IPTM.

De La Salle University Institute of Biomedical Engineering and Health Technologies (DLSU-IBEHT), with support from the DOST-PCHRD, held a virtual conference entitled TeknoLunas: the 1st Philippine Biomedical Engineering and Health Technologies Conference and Exhibit.

TeknoLunas centers on the theme, "Commercializing biomedical devices and health technologies for an inclusive and innovative Philippines". It highlighted the importance of commercialization and utilization of biomedical devices and health technologies, making these accessible to their beneficiaries while also promoting inclusivity and innovation.

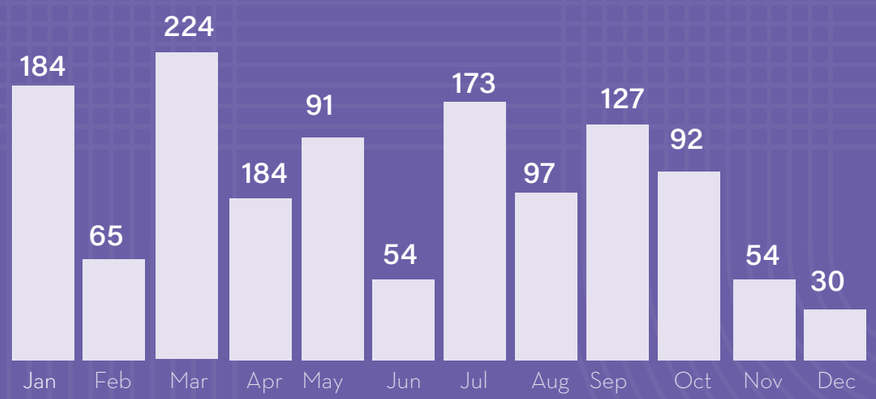
During the three-day event, the IPTM Philippine Health Research Innovations Matching Event (PHRIME) was also conducted with around 12 potential partners and investors. Through PHRIME, they met with the lead researchers of the Institute of Biomedical Engineering and Health Technology (IBEHT) to discuss how the research outputs and innovations can further be developed to reach the market. Four projects teams launched their innovation portfolio and met with prospective partners from the production and manufacturing sector, other related industries and government agencies, namely:

iFall device – a wearable device for fall detector system, pre- and post-fall heart rate, and blood pressure measurements
Portable Multi-Sensor System for Sweat – a wireless multi-sensor system that has the capability to analyze measurements in sweat such as glucose, lactate, potassium and sodium as well as sweat rate and temperature
SiglaVent – an Innovative Automated Ambubag intended to be used for patients requiring brief durations of assisted ventilation
3D printing and Additive Manufacturing for Biomedical Devices – emphasized the important and growing role of additive manufacturing in the biomedical sector.

INFORMATION PRODUCTS AND SERVICES

The Council aims to increase access to health research information through its Information Products and Services (IPS) unit which offers access to information systems and platforms. It also provides services such as Document Delivery Service e.g HERDIN PLUS Learning Session and Orientation and capacity building to provide assistance to institutions in managing/organizing their health research information.

2022 HERDIN PLUS new records uploaded



580K HERDIN PLUS Website visits in 2022

858 HERDIN PLUS full-text request and inquiries served

25 HERDIN PLUS Learning Sessions

HERDIN PLUS: Strengthening partnerships and building capacities

This year, the Health Research and Development Information Network Platform of Unified Research Information Management Systems (HERDIN PLUS) focused on enabling researchers, faculty, and students to use the Council's information system and introduce how it is being used to manage and disseminate their health and health-related research information such as research abstracts, journal articles, undergraduate and master theses, among others.

HERDIN PLUS organized a series of orientation online which was attended by Cebu South Medical Center, Our Lady of Fatima University, and Corporate Planning Department Philippine Health Insurance Corporation. The orientation included discussion about the features of the HERDIN PLUS, account creation, research forms, and document delivery requests.

The IPS also conducted HERDIN PLUS Learning Sessions online which were attended by representatives from colleges, universities, and hospitals. The learning sessions aim to prepare research-generating institutions to share their research outputs to the Council's information system and platform that is in compliance with copyright law and best practices in data protection and open access.

Overall, HERDIN PLUS was able to conduct 21 online learning sessions and four onsite session in Western Mindanao State University on 18 July 2022.

HERDIN PLUS Learning Sessions Conducted

DATE	INSTITUTION NAME
July 5, 2022	MCU Hospital – Filemon D. Tanchoco Foundation
July 6, 2022	Philippine Children's Medical Center
July 7, 2022	Governor Celestino Gallares Memorial Hospital
July 14, 2022	University of San Jose - Recoletos
July 18, 2022	Western Mindanao State University
July 21, 2022	West Visayas State University Medical Center
July 26, 2022	University of San Carlos
August 1, 2022	Universidad de Sta. Isabel
August 4, 2022	Ateneo de Zamboanga University
August 17, 2022	Cardinal Santos Medical Center
August 18, 2022	Trinity University of Asia
August 23, 2022	Far Eastern University – Dr. Nicanor Reyes Medical Foundation
September 2, 2022	Ospital ng Makati
September 5, 2022	Cebu Doctors' University
September 7, 2022	UERMMMCI
September 8, 2022	Bataan Peninsula State University
October 3, 2022	Cebu Normal University
October 13, 2022	Mountain View College
October 20, 2022	Our Lady of Fatima University
November 15, 2022	Philippine Rice Research Institute
November 16, 2022	Region II Trauma and Medical Center
November 24, 2022	Philipine Heart Center
November 28, 2022	Philippine Obstetrical and Gynecological Society
December 6, 2022	Central Mindanao University
December 7, 2022	MSU-Gen San

HERDIN PLUS

Health Research and Development Information Network
Platform of Unified Research Information Management Systems

PART 4

COLLABORATIONS

The Council values national and international partnerships in health research and development. It continues to forge collaborations with health, research, and academic institutions to bring forward its mission as the leadcoordinating body for health R&D

National Collaborations

AHEAD-HPSR

Advancing Health through Evidence-Assisted Decisions with Health Policy and Systems Research

The Advancing Health through Evidence-Assisted Decisions with Health Policy and Systems Research (AHEAD-HPSR) program is a DOST-PCHRD partnership with the Philippine Health Insurance Corporation (PhilHealth) which forwards research and development as a tool to strengthen local health systems and policies.

The program aims to:
inform the health sector's global and national administrative and legislative policy agenda
create an equitable and enabling environment for health policy and systems researchers all over the country
position the Philippines as a contributor to the regional and global health systems knowledge

In its current and latest cycle, the program focused on the implementation of selected 2021 AHEAD-HPSR Program components of the Department of Health (DOH) which tackle health financing, human resource management, health service delivery, health governance, and health economics. Eight (8) component projects were implemented and two (2) are already completed. These projects are expected to have at least one (1) policy brief and will directly impact the DOH's needs. The program's plans and objectives for the CY 2023 include the implementation of the 2022 AHEAD-HPSR program. In 2023, the AHEAD-HPSR program will focus on research priorities that are deemed necessary to support policy development for research management and the ethics review process in the DOH. Similar to the previous AHEAD programs, the program is always expected to provide policy inputs and recommendations.

Philippine Primary Care Studies

Dr. Antonio Dans
Sagip Buhay Medial Foundation

To provide information on current primary health care systems, a project by Dr. Antonio Dans of the Sagip Buhay Medical Foundations, Inc. aims to determine the impact of an outpatient primary care strengthening system on health care delivery. The project specifically studies a decentralized PHC system in selected locations in the country.

In 2022, the project recruited doctors and health professionals to provide primary healthcare at the chosen study sites in Samal, Bataan, and Bulusan, Sorsogon. Trainings and workshops were conducted among the healthcare providers as well. The team also engaged with private laboratories and pharmacies and established a public-private network for healthcare providers for the communities. Integrating eHealth into PHC, the team setup telemedicine systems in all the study sites in coordination with the respective barangay offices.
To date, the project has published 3 papers in local journals and 1 in an international journal.

The immediate end-users of the project (during the pilot studies) are the primary care facilities in the University of the Philippines Diliman, both private and public primary care providers in Samal, Bataan, and in Bulusan, Sorsogon. Meanwhile, the medium to long-term end-users after the pilot studies are the policymakers, health planners including the DOH, PhilHealth, and local governments who will implement the UHC Law, including the Provincial and City Health Boards.

Rapid Review of the Evidence on Prioritized COVID-19 Technologies and Intervention

Dr. Marie Carmela Lapitan
University of the Philippines Manila

To address the burdens of COVID-19 on Filipinos and the constantly-evolving research evidence on interventions to address the pandemic, a review of the current evidence is critical to contribute to the effective management and control of the disease in the country.

Under the leadership of Dr. Marie Carmela Lapitan of the University of the Philippines Manila, the DOST-PCHRD supports a project that aims to generate systematic reviews and evidence summaries on prioritized COVID-19 technologies and interventions.

Outputs of the project guided medical management, ensure effective public health intervention and maximize efficient use of limited resources would be informed by the evidence summaries.

Through the project, the team was able to come up with recommendations on the use of COVID-19 vaccines for children as well as pregnant and lactating women, the use of heterologous vaccines, boosters, and the efficacy of vaccines against variants of SARS-CoV-2. Aside from vaccines, the team also reviewed antigen testing, antibody testing, prognostic models, and carbon dioxide monitors.

Policies and guidelines of DOH agencies may be impacted by the evidence summaries. Project outputs and final recommendations are posted on the COVID-19 Living Clinical Practice Guidelines (LCPG) website (https://www.psmid.org/philippine-covid-19-living-recommendations-3/) and the Health Technology Assessment Unit (HTAU) website (https://hta.doh.gov.ph/assessments/) for public access.

PhilHealth STUDIES

The Philippine Health Insurance Corporation (PhilHealth) has been implementing strategies and programs to achieve Universal Health Care (UHC) since its establishment in 1995. In 2014, PhilHealth promulgated the Governing Policy on Research Engagement Guidelines and established the PhilHealth Research Agenda centered on generating knowledge for health policy reforms in pursuit of Universal Health Care. To carry out the PhilHealth Research Agenda, the Corporation partnered with the PCHRD the following year to implement the PhilHealth STUDIES Program, which stands for "Supporting the Thrust for Universal Health Care through Data, Information, and Knowledge Exchange Systems."

The program is dedicated to developing evidence-based policy reforms for PhilHealth programs and services by funding research studies and other S&T activities related to the fields of health economics and social health financing. In 2022, the program supported the conduct of research projects, conducted capacity building activities, organized a research forum, and completed a research forum documentation project. The partnership will continue until 2023 to further attain its objectives of providing quality social health insurance coverage.

Consistent with its mission towards health policy reforms, the research projects supported under PhilHealth STUDIES covered studies on client satisfaction, policy goals, inpatient care, review of claims, and accreditation mechanisms, among others. Aside from R&D, the program also supported a six-month training course entitled, "Capacity-Building Program on Implementation Research for PhilHealth Regional Offices and Technical Staff in PhilHealth Head Office: Local Evidence to Advanced Decisions (LEAD)." The activity equipped PhilHealth technical staff with necessary skills and knowledge to formulate policies guide by research. A total of 9 capstone papers were produced from the training.

Lastly, one of the highlights of 2022 was the PhilHealth STUDIES Virtual Forum held on 9 - 10 November 2022 at the Philippine International Convention Center, Pasay City with the theme "Health Financing in Post-Pandemic Times: Exploring New Theories and Practices to Advance UHC."

The two-day forum centered on ensuring financial protection for vulnerable sectors, expanding health service coverage, and re-examining policy reforms for Universal Health Care (UHC). It aimed to formulate evidence-based recommendations and strategies for improving the National Health Insurance Program by assessing the lessons learned from the COVID-19 Pandemic. The event also featured capstone research projects of the 2022 Local Evidence to Advance Decisions (LEAD) Capacity Building Program and the studies generated from the PhilHealth Research LAB.

International Collaborations

Newton Agham Programme Cycle 2

The Newton Agham Programme is part of the UK's Newton Fund Programme, which is an Official Development Assistance to the Philippines aimed at developing science and innovation partnerships to promote economic development and welfare.

Government Agencies of the Philippines were identified as key strategic partners for the Newton Fund. In 2015, the Medical Research Council (MRC) of the UK and PCHRD of the Philippines identified several areas of synergy and joint strategic interests, and held a joint call for health proposals in order to support research and innovation collaborations between the scientists from the UK and the Philippines through the Newton Agham Programme.

The PCHRD and the MRC have been in partnership to jointly implement research collaborations on Communicable and Non-communicable diseases of relevance in the Philippines. This partnership under the 'Newton Agham' has resulted in a total of 12 collaborative projects approved between 2015 to 2018, amounting to over Php 200 million. To date, the program provided funding to projects focused on topics such as Dengue, Malaria, AMR, TB, HIV, Schistosomiasis, Rabies, Zoonotic Diseases and Diabetes. This programme also enabled partnerships with various UK institutions namely: Liverpool School of Tropical Medicine, Wellcome Sanger Imperial College, Imperial College London, University of Bristol, The London School of Hygiene & Tropical Medicine, University of Glasgow, University of Surrey, Queen's University of Belfast, and University of Cambridge.

The continued success of the partnership involved close coordination between PCHRD and MRC-UKRI in identifying research priorities for funding, streamlining the proposal review process between the agencies, and monitoring ongoing projects. Cycle 2 projects not only focused on Infectious Disease research, but also enabled opportunities for partnerships on topics on Non-communicable diseases like Diabetes.

Agency for Science, Technology, and Research (A*STAR) - Singapore

The Council participated in the Innovation Mission in Singapore for the establishment of HeaRTNovation hubs in the Philippines, through the A*STAR, particularly its Diagnostics Development Hub (DxD Hub).

The Innovation Mission in Singapore was a two-day benchmarking activity with the primary objective of exchanging information on the best practices and programs for establishing technology business incubation (TBI) hubs in the healthcare institution setting.

This is aligned with the objectives of NEDA-DBM Innovation Fund approved project titled, "Establishment of PCHRD Health Research and Technology Innovation Hubs (HeaRTNovation Hubs): Expanding the TEKI in Health Program among Health Institutions," implemented by the Philippine Council for Health Research and Development in support of R.A. 11293 otherwise known as the Philippine Innovation Act. The project aims to develop a new model of technology business incubation different from the existing innovation or TBI program of the other two DOST Councils as the target institutions' strength and capacity is on health innovation.

With the Council set to launch its HeaRTNovation Program in 2023, learnings and insights from this Innovation Mission helped develop the framework and guidelines in the implementation of the PCHRD HeaRTNovation Hub program.

During the first day of the Innovation Mission, the Council met with the representatives from DxD Hub's Clinical Laboratory led by its Vice President for Outreach and Talent, Ms. Yuan Lu Ho, where she discussed Singapore's commitment to sustain investments for Research, Innovation and Enterprise which encompasses its RIE2025 plan. Under the Human Health and Potential RIE2025 domain, platforms and organizations that will drive innovation and translation of technologies were established to create value for Singapore's enterprises. The Council was also introduced to Co11ab, Singapore's First Biomedtech Incubator Embedded within a Health City, in a meeting with A*StartCentral.

To witness and learn from their best practices, the Council was able to visit the A*STAR SIMTech Innovation Factory on the second day. It is a center dedicated to support Singapore's SMEs from ideation to the design and engineering stage, allowing them to venture into higher value markets. It also caters to the needs of its member companies by design capability building which eventually ensures successful market entry. The delegates from the PCHRD also had an opportunity to meet with A*STAR consultant, Dr. Sidney Yee about the development of the framework for the HeaRTNovation Program.

ASEAN Diagnostics Initiative (DxI)

dxdhub
DIAGNOSTICS DEVELOPMENT HUB

Diagnostics Development Hub Singapore

On 18-23 July, the Council worked with the Diagnostics Development Hub (DxD Hub) Singapore, its co-lead partner agency in the ASEAN Diagnostics Initiative (DxI), in developing strategic programs and activities in the area of diagnostics between Philippines and Singapore.

During the first two and a half days, the representatives from the council and DxD Hub were able to discuss and finalize the activities for the ASEAN DxI Working Session and Strategic Planning, programme agenda, and project proposals which were presented to Dr. Jaime C. Montoya and Dr. Sidney Yee of ASEAN DxI.

The following plans and activities were formulated for the coming year:

ASEAN DxI Plans and Activities for 2022 - 2023
Phase 2 ASEAN Serosurveillance Project (ASSeSS Study)

1. Expansion of the study to involve the four remaining AMS (Cambodia, Laos, Myanmar, Brunei)
2. Additional studies for seroprevalence pre- and post-booster dose administration, long-term immunity determination and detection of antibodies against different SARS-CoV-2 variants using a multiplex assay
3. Timelines and resources needed

Submission of new proposals for funding

Proposed governance and restructuring of ASEAN DxI Strategic Planning Panel (SPP) (A revised governance structure was formulated to streamline decision-making for the ASEAN DxI. Briefly, proposed revisions in the governance structure are as follows:)

1. PH & SG will be co-leads (country leads) for ASEAN DxI to chair the Programme Steering Committee (PSC).
2. Programme Steering Committee will comprise a nominated Steering Committee member from each AMS & ASEAN Secretariat.
3. The PSC will advise on ASEAN DxI priority projects and nominate Key Opinion Leaders (KOLs) as project advisors/investigators on a per project basis.

ASEAN Dx Initiative Special Meeting

On the last day of the working session and strategic planning, Dr. Montoya delivered a talk on the role of PCHRD in fostering innovations to define the future of diagnostics in increasing awareness of the current activities of DOST-PCHRD in support of research, development and innovation for diagnostics and other technologies, and to encourage future collaborations with DxD Hub. The major programs/priority research areas were tackled, as well as the different mechanisms by which PCHRD and DOST support technology innovations from the level of R&D up to technology transfer and/or commercialization or business development.

7th World One Health Congress

The Council attended the 7th World One Health this year which features in parallel the Pinnacle Series sponsored by Temasek Foundation. The Series is a three-day programme that aims to increase awareness on preparedness to combat public health threats in Southeast Asia, which is a regional hotspot for emerging infectious diseases.

The Pinnacle Series has five tracks, namely, Infectious Disease Threats in Southeast Asia (AMR), Scientific Evidence for Pandemic Communications (PEB), Pandemic Preparedness and Health Systems Resilience (PPHSR), One Health Science (OHS) and Impact on and Innovations in Clinical Practice (IICP).

Dr. Jaime Montoya delivered a talk under the PPHSR track, along with invited speakers from the ASEAN Diagnostics Initiative, on transformative innovations toward pandemic preparedness. Experiences, initiatives at the local, regional and national levels, and best practices were shared in the session, which allowed participants to learn applications and innovations which can be adopted and adapted in their own communities or localities. He also shared the success in achieving the UN Sustainable Development Goals (SDGs). It was startling to learn that we will not be able to reach the SDGs on the target period even without the COVID-19 pandemic, and it was very unfortunate that the pandemic has reversed much of the progress that we have achieved through the years before the pandemic. The challenges of developing resilient health systems remain, and a whole-of-society approach is key to addressing these challenges.

During the closing ceremony, the WOHC laid out what's next for One Health Agenda which includes investment in prevention, the need to work across different sectors of society, effective promotion and communication of One Health approach, among others.

Aside from the WOHC, the Council was also present during the 6th ASEAN Serosurveillance Study (ASSeSS) Principal Investigators' Meeting on 10 November at the Singapore Botanical Gardens where principal investigators from each of the participating countries, namely, Indonesia, Malaysia, Thailand, Vietnam, Philippines, and Singapore, gave updates on the status of the serosurveillance study in their respective countries. The meeting also served as an opportunity to learn best practices on implementing multi-site international research from the different study sites in ASEAN.

In addition to this, the ASEAN Diagnostics Initiative, headed by the Philippines and Singapore, also gathered stakeholders through a hybrid meeting in A*Start Central on 11 November. Several matters were discussed, particularly on how to move forward with the initiative, including the composition of the strategic planning or steering committee.

Fondazione Italiana Fegato (FIF)

In 2019, DOST-PCHRD signed a Memorandum of Understanding (MOU) with Fondazione Italiana Fegato (FIF) to work on the following areas of collaboration: 1) establishment of the Philippine Liver Network; 2) implementation of a graduate studies program (PhD in Molecular Biomedicine) at the University of Trieste (UNITS) with research training from FIF; 3) enhancement of the Research Fellowship Program; and 4) Sandwich Research Training in FIF for the current MD-PhD in Molecular Medicine scholars.

Last year, DOST-PCHRD and FIF, signed another MOU with University of the Philippines Manila (UP Manila) to formalize the parties' commitment to advance liver research in the Philippines. An offshoot of the existing cooperation, this tripartite partnership will promote joint research efforts and capacity-building initiatives on liver research both for Filipino and Italian researchers. One of the main outputs to be expected is the organization of the Philippine Liver Network composed of Filipino academic and research institutions.

Visit in Italy

The DOST Delegation went to Italy this year to assess the current capacity building program being implemented at the University of Trieste and University of Pisa and FIF, conduct meetings with key stakeholders, and developed plans for the liver collaboration.

During the visit, a scholars forum was conducted to provide a platform for current scholars to present their outputs. Dr. Inah Marie Aquino and Dr. Eric David Ornoso presented their research results. While Ms. Kay Cabral, third year PhD student, presented some updates on her and Dr. Noel Salvoza's accomplishments and milestones.

Several meetings with representatives of the University of Trieste (UNITS), Filipino Scholars, future of liver collaboration, board of FIF, University of Pisa, key officials from Italy's Ministry of University and Research were also conducted. The DOST delegates were also able to pay courtesy calls to Regional Government Authorities, Office of the Mayor (Trieste), and Philippine Consulate General in Milan.

Visit in Manila

Prof. Claudio Tiribelli of FIF visited Manila last September 6-8, 2022 to attend various meetings with key stakeholders. The first meeting was with UP Manila (UPM) and the National Institutes of Health (NIH), where the roadmap on Network Development for the next six years (2022-2028) was discussed. The establishment of the Philippine Liver Network was emphasized, focusing on Hepatitis, Cancer, and Fatty Liver diseases as main priority areas.

A courtesy call was made with the Italian ambassador H.E. Marco Clemente. Prof. Tiribelli shared the partnership between FIF and DOST-PCHRD which began in 2019, what has been achieved, and future goals. DOST-PCHRD submitted an article for inclusion in the coffee table book souvenir for the 75th anniversary of the diplomatic relations between Italy and the Philippines.

Prof. Tiribelli also met with the Hepatology Society of the Philippines, represented by Dr. Mara Panlilio. Discussions were made on the collaborative efforts spearheaded by FIF, PCHRD, and UPM, which should be announced in national conferences held annually to encourage involvement of MD-PhDs, clinicians, gastroenterologists and nutritionists. This was shortly followed by a meeting with MD-PhD scholars interested in doing liver research through a sandwich program at FIF.

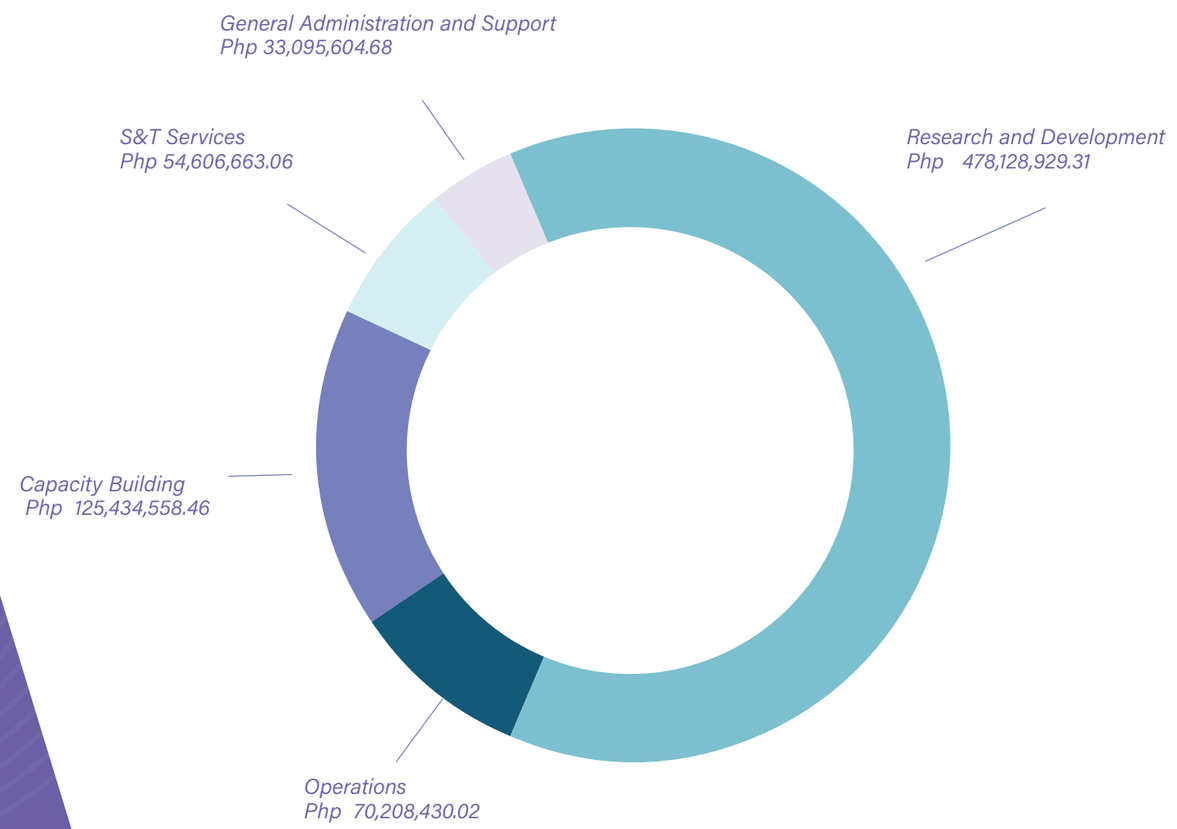
A quick meeting was also held with USec. Beverly Ho of

INSIDE PCHRD

Financial Highlights

Expenditures in 2022

Source: General Appropriations from Government and Grants-in-Aid



Resource Mobilization

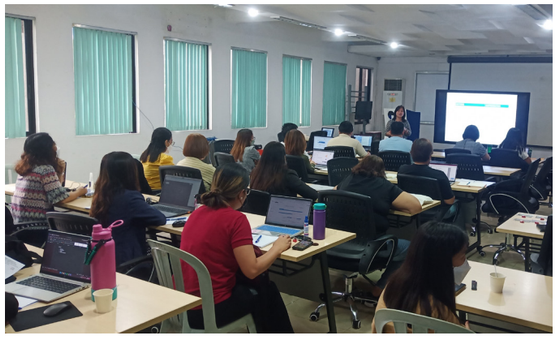
PCHRD Status of Funds 2022

PARTICULARS	ALLOTMENT	EXPENDITURES	UTILIZATION RATE
General Appropriation from Government (GAA-RA No 11465)			
General Administration and Support	38,607,310.00	33,095,604.68	85.72%
Operations	76,124,900.00	70,208,430.02	92.23%
Grants-in-Aid	**664,572,000.00**	**658,170,150.83**	
Research and Development	478,128,929.31	478,128,929.31	100.00%
Capacity Building	125,434,558.46	125,434,558.46	100.00%
S & T Services	61,008,512.23	54,606,663.06	89.51%
Total Fund from National Government	**779,304,210.00**	**761,474,185.53**	**97.71%**
Funds from Other Sources			
FUNDING SOURCE/PROJECT TITLE	AMOUNT*	EXPENDITURES	UTILIZATION RATE
DOH - 2021 Advancing Health Through Evidence Assisted Decisions with Health Policy and Systems Research Program	46,479,566.95	29,635,417.46	63.76%
DOH - 2018 Advancing Health Through Evidence Assisted Decisions with Health Policy and Systems Research Program	48,752,157.49	9,918,442.56	20.34%
DOST - Balik Scientist Program	5,400,787.83	3,581,359.55	66.31%
DOST - Addressing and Responding to COVID-19 through Health Research (ARCHER)	5,097,383.42	1,419,993.54	27.86%
DOST - Creation of Tuklas Lunas Program Management Team	71,000.00	71,000.00	100.00%
DOST - Indirect Cost of Various Projects	46,875,559.81	19,864,715.79	42.38%
National Economic and Development Authority - Establishment of PCHRD Health Research and Technology Innovation Hubs (HeaRTNovation Hubs): Expanding the TEKI in Health Program among Health Institutions	2,621,828.00	362,169.26	13.81%
Food and Drug Association - Development of FDA Clinical Trial Regulatory Management Plan	19,800.00	19,800.00	100.00%
Science Education Institute - Accelerated Science and Technology Human Resource Development Program Scholarship Grant	26,768,612.11	16,447,186.47	61.44%
Philippine Health Insurance Corp. - Strengthening the Thrust for UHC through Data, Information, and Knowledge Exhange Systems	30,978,963.31	26,599,178.42	85.86%
Total Trust Fund from Other Sources	**213,065,658.92**	**107,919,263.05**	**50.65%**

PCHRD received its CSC-approved Merit Selection Plan guidelines

On 14 September 2022, the Civil Service Commission (CSC) approved DOST-PCHRD's Merit Selection Plan guidelines, a systematic method of assessing and selecting employees on the basis of their relative qualifications and competence to perform the duties and responsibilities of the position.

Recognizing the importance of equal employment opportunity for men and women at all levels of the position in the Council provided that they meet the minimum requirements, PCHRD ensures that there will be no discrimination in the selection of employees on account of gender, civil status, disability, religion, ethnicity, or political affiliation. It is the policy of the PCHRD to strictly adhere to the principles of merit, fitness, and equality. The Plan covers career positions in the first, second and third levels, as well as non-career positions in PCHRD.



PCHRD opens door for Pisay students in science immersion program

The PCHRD hosted 22 scholars from the Philippine Science High School (PSHS) CALABARZON regional campus in a Science Immersion Program (SIP) on 4-22 July 2022, which enabled the high school students to be exposed to ongoing health researches and initiatives all over the country and encouraging them to pursue future careers in S&T.

The Council provided a three-week mentorship to students through a hybrid setup, with synchronous lectures via Zoom and complementary facility visits to different implementing agencies. The S&T Fellows facilitated the curation of lectures and facility visits with PCHRD's research partners aiming to maximize the students' awareness of the research programs being done in the Philippines. The SIP is a regular summer activity organized by the PSHS that aims to develop science research laboratory skills among their students, as well as help identify and formulate research problems for their future research work.

The first PCHRD-hosted SIP was conceptualized and led by Mr. Paul Ernest N. de Leon, Chief SRS, PCHRD-RDMD, and was pioneered by the Council's S&T fellows: Dr. Phoebe Nicole G. Perez, Dr. Karell Jo Angelique C. Calpito, Dr. Sarah Jane A. Jimenez, Dr. Christian Adam L. Espiritu, Dr. Ma. Neda A. Catalma, Dr. Albert Remus R. Rosana and Dr. Aimee Yvonne Criselle L. Aman.

PCHRD Personnel

As of 31 December 2022, the Council has employed 109 technical staff, 34 administrative and 11 support staff - 2 with doctorate degrees, 16 with master's degrees, 124 with bachelor degrees, 4 with post high school diploma, and 8 with high school diploma.

OFFICE OF THE EXECUTIVE DIRECTOR (OED)

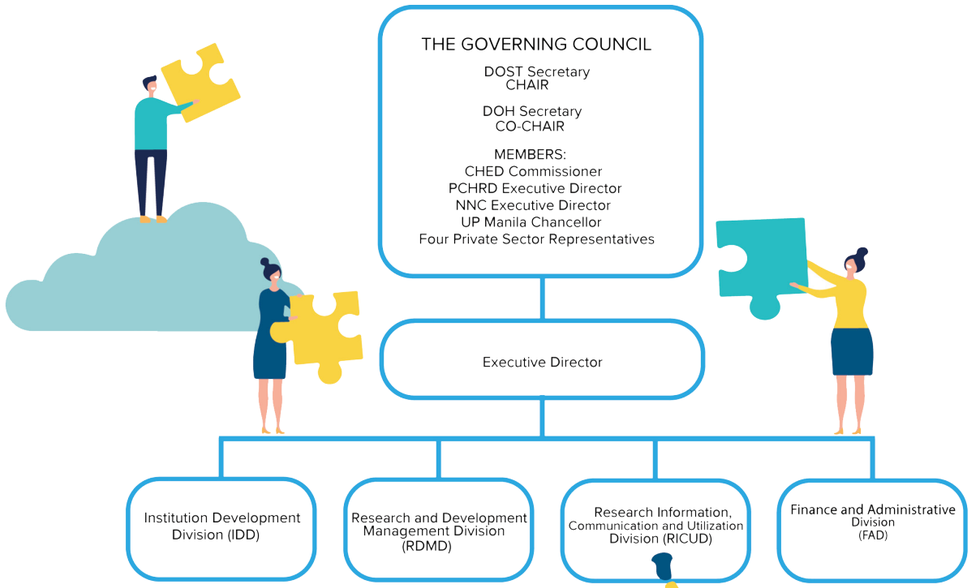
FINANCE AND ADMINISTRATIVE DIVISION (FAD)

INSTITUTION DEVELOPMENT DIVISION (IDD)

RESEARCH AND DEVELOPMENT MANAGEMENT DIVISION (RDMD)

RESEARCH INFORMATION, COMMUNICATION AND UTILIZATION DIVISION (RICUD)

Organizational Structure



ANNEXES

Funded Projects

Completed

PCHRD-funded

ARCHER/COVID-19

Relative Risk of Coronavirus Disease-19 (COVID-19) Infection and Disease Outcomes with ABO Blood Type among Hospitalized Filipino Patients from Select Tertiary Hospitals in Metro Manila, Philippines: An Ambispective Cohort Analysis

Risk Factors, Clinical Characteristics and Transmission of COVID-19 in Non-Pregnant and Pregnant Women in Metro Manila, Philippines: A Multicenter Study

'SPECIFieD': Smart Probes Enabling COVID Identification for Improved Efficient Diagnosis
The Immune Response of COVID-19 Peptide-loaded Allogeneic Dendritic Cells

Anti-Coronavirus Therapies to prevent progression of COVID-19 (ACT), a randomized trial
Development of a Cell-Based Immunoassay for Coronavirus Disease 2019 (COVID-19) Serologic Testing

A Cardiovascular Outcome-Moderated Model of the Association of COVID-19 Infection and Disease Outcomes among Hospitalized Patients from Select Tertiary Hospitals in Metro Manila, Philippines: A Retrospective Cohort Analysis

Collection and Archiving of Patient Sera and Plasma for Immunochemical Analysis to Detect Antibodies Against Infectious Pathogens

Developing and Implementing Testbeds for Low-cost Ventilation System Applicable in Tropical Regions for Risk Reduction of Infectious Aerosol/Virus Transmission

TUKLAS LUNAS

Tuklas Lunas from Endemic/Indigenous Plants in Bicol with Pharmacological Activity against Diabetes, Obesity and Hypertension - Project 1: Screening for anti-diabetic, anti-obesity, and anti-hypertensive activities and toxicity evaluation of the plant extracts

Philippine Biorepository Network - Project 3: Development of Biobanking Facility for Plant Extracts/Compounds for Drug Discovery

Tuklas Lunas Consortium in the Cordillera: Documentation, Standardization, and Formulation of Dosage Forms from Indigenous Plants and Microorganisms with Bioactivities - Project 1. Potential activity of indigenous and endemic plant extracts from the Cordillera region against ESKAPE bacteria

Studies and Correlation Analyses of Chemical Composition and Bioactivity of three (3) common Philippine Botanial Plants: Antipyretic, Anti-inflammatory, Analgesic Activity of Extracts from Vitex negundo L. and Zingiber officinale Roscoe, and Antimicrobial Activity of Blumea Balsamifera Extract

Tuklas Lunas Consortium in the Cordillera: Documentation, Standardization, and Formulation of Dosage Forms from Indigenous Plants and Microorganisms with Bioactivities - Project 6: The formulation & evaluation of capsules containing herbals with antidiabetic activity

Chemical and Biological Characterization of Pure and Bioactive Compounds from Kadios (Cajanus cajan) Seeds and its Topical Formulation Studies

DRR-CCA IN HEALTH

Determining Provincial Health Risk to Climate and Disasters in the Philippines

Development of IKSP-based Technologies for Disaster Risk Reduction and Health Emergencies: The Aytas of Mt. Pinatubo as Models for Climate Change Resilience

FUNCTIONAL FOODS

Development of a Turmeric Spray-dried Extract Standardized for Curcumin and Turmerin for use in Functional Foods

Isolation and Characterization of Bioactive Peptides from Coconut Fruit (Cocos nucifera L.)

MENTAL HEALTH

Psychosocial interventions used by mental health professionals for in-patients of tertiary hospitals referred for psychosocial problems

Patterns of Detection and Treatment of Mental and Behavioral Disorders among Overseas Filipino Workers (OFWs): Implications to Psychosocial Support Services

Understanding the Social Determinants of Mental Well-being

Acceptability of Telepsychiatry among Overseas Filipino Workers in Kuwait

DIGITAL AND FRONTIER TECHNOLOGIES FOR HEALTH

Rapid Assessment of Health Information Systems towards Pandemic Resiliency and UHC in Two Provinces

RabCast: Proof-of-concept for a Forecasting Tool for Rabies Spread in Davao City Through Combined Genomic and Mathematical Approaches

Immersive Technology Applications in Healthcare
Developing Immersive Technology System for the Management of Patients with Dementia and Behavioral and Psychological Symptoms (Phase 1)
Developing Immersive Technology Gamification System for Rehabilitation Management of Pediatric Patients with Cerebral Palsy and Mobility Limitations (Phase 1)

The UK-Philippines Remote Retinal Evaluation Collaboration in Health: Diabetic Retinopathy (REACH-DR)

OMIC TECHNOLOGIES FOR HEALTH

Epidemiology of Acute and Severe Dengue Infection through the Integrated Analysis of Molecular, Virologic and Clinical Factors

ZooTRIP: Zoonotic transmission of intestinal parasites: implications for control and elimination (Newton Agham Cycle 2)

DIAGNOSTICS

Isolation and Characterization of Lectins as Ligands for the Development of Lectin-Based Biosensors for the Detection of Food-Borne Pathogens

Biochemical and Immunologic Characterization and Cross-reactivity Studies of Allergenic Local Pollen Extracts

RE-EMERGING AND EMERGING DISEASES

The Clinical and Demographic Profile of Dengvaxia Vaccinees with Suspected Acute Dengue Infection

Seasonal Arboviruses of Aedes albopictus (Diptera: Culicidae) in Highland and Lowland Sites of Cebu city, Philippines

G.T.A.R.A. (Grip/Grasp Training with Active Range of Motion Activities using Guitar): Guitar Lessons for
Restoring Hand Function Among Patients with Unilateral Hand Impairment from Chronic Stroke

Evaluation of the Effectiveness of a UP Manila Covid-19 Trial Registry in Participant enrollment and validation

Process Development of the Dengue Anti-NS1 Rapid Diagnostic Test

Research Development Proposal for the Liver Research Program in the Philippines

Predictive Value of 24-Hour Bilirubin in Developing Hyperbilirubinemia among Term Infants in a Multi-Center Study in the Philippines

DOST-funded

ARCHER

SOLIDARITY Treatment Trial PLUS: An International Randomized Trial of Additional Treatments for COVID-19 in Hospitalized Patients Who Are All Receiving the Local Standard of Care

TUKLAS LUNAS®

Tuklas Lunas Consortium in the Cordillera: Documentation, Standardization, and Formulation of Dosage Forms from Indigenous Plants and Microorganisms with Bioactivities - Nanostructured Herbal Extract of Momordica charantia (Bitter Melon/Ampalaya), Allium sativum (Garlic) and Curcuma longa L. (Turmeric) as Antidiabetic Agents

Metabolomics-driven Discovery of Antimicrobial Drug Leads and Anticancer Screening of Extracts from Marine Sediment-Derived Actinomycetes of Iloilo

Discovery and Development of Health Products (DDHP): Disease-Specific Bioactive Hits from Terrestrial Organisms - Project 4. Anti-infective Bioactive Hits Against Methicillin-Resistant Staphylococcus aureus and Klebsiella pneumoniae from Priority Bioactive Extracts

Discovery and Development of Health Products (DDHP): Disease-Specific Bioactive Hits from Terrestrial Organisms
Project 1. Anti-Cancer Drug Leads from Marine Sponges Collected Off the Coasts of Mindanao
Project 5. Potential Anticancer Bioactive Hits from Priority Bioactive Extracts against Breast Cancer Cell Lines
Project 6. Anti-infective Hits from Priority Bioactive Extracts from Indigenous and Endemic Plants of the Cordillera Against Staphylococcus aureus and Pseudomonas aeruginosa
Project 7. Anti-infective Hits from Priority Bioactive Extracts from Fungi

Project 8. Anti-diabetic Bioactive Hits from Priority Bioactive Extracts from Plants Indigenous to Benguet
Project 9. Anti-Lung Cancer Bioactive Hits from Priority Bioactive Extracts
Project 10. Anti-hyperuricemic bioactive hits from priority plant extracts
Project 11. De-replication with LC-MS Based Metabolomics

PHARMAFERN: Development of Health Products from Ferns - Project 5. Anti-inflammatory Compound/s from Select Ferns in Mindanao

Potential Anti-Cancer Leads from Plants in Region XII (USM-TLDC) - Project 1: Screening of plants from Region XII with Potential Anti-Cancer Activity

NUTRITION AND FOOD SAFETY

Assessment of trans fat content of selected processed food

OMIC TECHNOLOGIES FOR HEALTH

Enhanced Capability Building in R&D in GenomicS - Establishment of Genomics Consortium and Core Facility in Mindanao

DIAGNOSTICS

Field Integrated Novel Diagnostics for Flaviviruses (FIND-Flaviviruses)
Project 1: The ArboChip Project: Molecular Arboviral Detection using Microfluidic Chip Technology
Project 2: Field Integrated Novel Diagnostics for Flaviviruses Microfluidic Diagnostic Assay

Development of an Animal Model for Use in Radiation Research and Establishment of the Radiation Research Center: Core Facility for Radiobiological Research

Volatile Organic Compounds Detection in Active Pulmonary Tuberculosis Using Multi-array Metal Oxide Gas Sensor

Development of Paper-based Diagnostic Kit for HIV Drug Resistance using Recombinase Polymerase Amplification

RE-EMERGING AND EMERGING DISEASES

Institutional Grant for Invigorating Basic Research on Health Sciences Phase II

Cataloging Possible Philippine Strains of Zika and African Swine Fever Viruses and Coconut Cadang-Cadang Viroid through Genome Sequencing

Assessment of Diagnostic Algorithms and Tools for Multidrug Resistant and Drug Sensitive Tuberculosis in the Philippines Part II (TB-FIT 2)

DOST-PCHRD-Funded

ARCHER
Utility of Various Biomarkers in Detecting Cytokine Storm Syndromes and Predicting Disease Progression and In-Hospital Mortality Among Patients with Moderate to Severe COVID-19 disease at a Philippine Tertiary Hospital

Assessment of the Gut Microbiome for COVID-19 Diagnosis and Prognosis

Evaluation of Plasma Therapy for Retarding Progression and Preventing Complications in COVID-19
An Experimental Study on the Development of a Liquid Medium for On-Site Inactivation of SARS-CoV-2 for RT-PCR Testing

Seroprevalence of SARS COV2 in Communities in the Philippines

CRADLE S4C

Standardized and Safe Tawa-tawa: Filling in the Final Gaps for a Clinically-proven Nutraceutical Product
Knowledge Management System for Filipino Health Research Projects (Phase 2)

New

PCHRD-Funded

ARCHER

Wastewater-based Epidemiology of SARS-CoV-2 in the City of Manila: Conceptualizing a COVID Risk Assessment of Community Infection through Surveillance of Sewage (COVRASS)

A Prospective Study on the Accuracy of the CHERISH AI-assisted Diagnosis of COVID-19 Pneumonia (CHERISH2)

DISPO: Design, Development, and Implementation of a Natural Language Processing-enabled Virtual Assistant for Depression and Anxiety among People with Mild COVID-19

Antibodies Against COVID-19 among Healthcare workers After Boosting (AbACHAB study): Safety, Reactogenicity, and Humoral Immunogenicity of SARS-COV2 booster vaccination among Healthcare workers in Makati Medical Center

AMPLIFIED: Clinical development of a simplified SARS-CoV-2 genomic point-of-care diagnostic

TUKLAS LUNAS®

USA-TLC: Discovery and Development of Health Products - USA-TLC Phase II: Early-Stage Development of Antibiotic and Anticancer Leads from Philippine Marine Streptomyces

ACCELER8: Advancing Antivirals thru Combined Computational Design and Emerging Omics to Leverage Repurposed and Natural Drugs for SARS-CoV-2 Therapeutics

Pre-Clinical Studies and Scale Up Formulation of Anti-Inflammatory PharmaFern Ointments

MENTAL HEALTH

Identifying and Mapping Safe Havens from Stigma and Discrimination: Towards Elimination of Hepatits B in the Philippines

Follow Up Study on Pilot-Testing a Manualized Tele-Synergistic Aftercare Program for Recovering Drug Dependents among 17 DOH-DATRCs

Mental Health Status of Youth and Mental Health Resources in the Province of Tarlac

An Assessment of the Adolescent Telemental Health Services Available in Batangas

DIGITAL AND FRONTIER TECHNOLOGIES FOR HEALTH

The Development and Implementation Research of the DOH-PSMID National Antibiotic Guidelines Mobile Application (NAG App)

Multicenter Implementation of Orthogeriatrics and the Fracture Liaison Service for Elderly Hip Fractures: An Evidence-based Framework for a Sustainable Digital Health Registry

i-SULAT (Intelligent Stroke Utilization, Learning, Assessment and Testing): A Development of an Intelligent Quantitative Software-Based Handwriting Assessment and Testing System for Early Childhood Handwriting Evaluation

Requirements for E-Care System (Alz-e-Med) to Support Patients with Dementia (formerly AI-Based E-Care System to Support Patients with Dementia (RODE)

RabDash DC: A rabies data analytics dashboard integrating predictive models and genome informatics to support the rabies control program in Davao City

Biomedical Devices Engineering for Health

Hydrogel from pig kidneys: Preparation, characterization, and pre-clinical assessment for kidney tissue regeneration

POWer 2: Mobile Biomedical Device Unit to Enhance Access to Upper and Lower extremity devices
SMIDERM: Smart Multifunctional and Indigenous Dressings sterilized using the Electron beam as novel wound Repair Matrices - Phase I. Biomedical device development and characterization

Biomechanical Evaluation of In-House Produced 3D printed Polyetheretherketone (PEEK) Osteosynthesis Plates for Simple Mandibular Fractures

AI-assisted Strategy for 3D-printed Ceramic-Clay and Polymer-Nanoclay Composite Scaffolds Towards Cost-Effective Bone Tissue Repair

Pediatric Abdominal Wall Defect Closure Assistive Device

OMICS

Investigating the Epidemiology of X-Linked Dystonia-Parkinsonism

Proteomic Analysis of Philippine SARS-CoV2 Patient Plasma by Artificial Intelligence and High-Resolution Mass Spectrometry

Screening for Metabolomic Biomarkers of Diabetic Nephropathy in Filipino adult Type 2 Diabetes Mellitus Patients

DIAGNOSTICS

Innovative point-of-care diagnostics and environmental surveillance tools for the elimination of Asian schistosomiasis

Enhanced Digital Image Analysis System for the Assisted Pathologic Evaluation of Selected Disease Conditions

RE-EMERGING AND EMERGING DISEASES

Metagenomic and genomic surveillance of antimicrobial resistance in hospital wastewater and computational prediction of efficacy of alternative non-antibiotic therapeutics

Modelling a Gender Responsive TB Program in the Community: Validation of Gender Responsiveness Standards in TB Prevention and Management

Characterization of Inflammatory Markers Among Children with Different TB Status and On Conversion to Active TB

Profiling the Different Vasculitides in the Philippines

DOST-Funded

TUKLAS LUNAS

Securing the Health of the Filipino For The Next Millennium: The National Institutes of Health National Clinical Trials and Translation Center (NIH NCTTC)
Project 3: Unified Data and Safety Monitoring of Clinical Trials in the Philippines
Project 4: Blended e-Learning Academy of Locally Adapted and Developed Research Modules to Enhance Skills of Filipino Clinical Investigators to Undertake Investigator-Initiated Researches"
Project 2: Establishment of Pharmaceutical Sciences Services for Clinical Research"
Project 5: Phase II Clinical Trial of Leucaena leucocephala Seed Extract Suspension for the Treatment of Ascariasis, Enterobiasis, and Hookworm Infection"

FUNCTIONAL FOODS

The Cocoa-loca Project: Development of functional food products and ingredients from cocoa bean shell waste

Functional Food Program on Philippine Seaweed - Project 1. Evaluation of Nutrient Compositions, Potential Health-Promoting Properties and Harmful Components in Selected Edible Seaweeds in the Philippines

NUTRITION AND FOOD SAFETY

Research Center for Rehabilitation/Sports Medicine (Oplan Atletang Pinoy)
Project 2: The Development of a Local Technology in the Preparation of Platelet Rich Plasma (PRP)
Project 3: Development of Software Measuring Patellar Tendon Displacement in Patellofemoral Pain Syndrome

Healthy Aging Program for Pinoy (HAPPY) Senior Citizens: Promoting Quality of Life Among Older Filipinos Through Food and Nutrition Solutions
Project 2: Development and Pilot-Scale Production of Innovative Food Products for Older Male and Female Filipinos
Project 3: Managing the Nutritional Needs of Older Filipino with Due Attention to Protein Nutrition and Functional Health (MANO PO) Study

MENTAL HEALTH

Assessment of pharmacokinetic and pharmacodynamic interactions of selected psychobiotic and antidepressant drugs in depression-like rat model

Development of a locally relevant and structured educational activities and tools for the tertiary level college students, faculty, staff and guidance counselors

Adaptation and validation of culturally sensitive Mental Health Scale for Screening and Diagnosis of NON-SUICIDAL SELF-HARM and SUICIDALITY specific for College/University Students

Development of a locally relevant and structured educational activities and tools for the tertiary level college students, faculty, staff and guidance counselors

DIGITAL AND FRONTIER TECHNOLOGIES FOR HEALTH

QARE-HHC: Quicker Analytics for ResponsivE Home Health Care

BIOMEDICAL DEVICES ENGINEERING FOR HEALTH

Development of a Three-dimensional Bioprinted Human Skin Equivalent for In Vitro Biocompatibility Studies of Topical Formulations

NeuRoTech: Establishment of the Neurorobotics Technology Center through the DLSU - Institute of Biomedical Engineering and Health Technologies (IBEHT)

SELLA Project: EEG-Integrated Wheelchair Power Unit for Patients with Physical Disabilities

i-BALIK: Cognitive and Motor Function Rehabilitation using Neurofeedback Training System for Stroke Patients

SIGLA: Depression Recognition and Analysis from EEG: Towards Virtual Reality - based Therapy Program

OMIC TECHNOLOGIES FOR HEALTH

Multi-OMICS Research Program for Health (MORPH)
Monitoring Drug Efficacy through Multi-Omics Research Initiative in Alzheimer's Disease (MEMORI-AD)

Molecular Epidemiology of Mycobacterium tuberculosis and Human Immunodeficiency Virus among Adult Filipino TB/HIV Co-infected Patients

Determinants of Acquisition, Persistence, and Clearance of Oncogenic Cervical Human Papillomavirus Infection in a Cohort of Women in Rural and Urban Philippines
Establishing the Integrated Protein Research and Development Center (IPRDC): A Biotechnology Facility for Health
Project 1 Enzyme Production: Cloning, Fermentation, Expression and Characterization at Small Scale

Project 2 Scaling Up and Optimization of Protein Production
Project 3 Building Open-Source Instrumentation for Fermentation and Protein Purification
Project 4 Development of Chemical Tools and Materials for Protein Purification

Research and Development Center for Maternal and Child Health

Determinants, Management and Prevention Strategies for Childhood Stunting Among Children 0-59 Months Focusing on Maternal and Child Dyad

Mother and Child Determinants of Pediatric Dengue and Development of a Risk Assessment Scoring System for Severe Disease among Filipino Children

Determinants and Risk Assessment Scoring System for Postpartum Depression Among Filipino Mothers

Identification of genetic variants associated with children's growth and development in a Filipino Birth Cohort

Nutritional status and maternal lifestyle among pregnant women in Samar and Biliran and its Relation to Pregnancy Outcomes during the First 1000 Days: A Prospective Cohort Study

Infant Gut Microbiota and Linear Growth: A Longitudinal Study of the Eastern Visayas Birth Cohort

Linking the Metabolome with Genetic Variation, Nutrition, and Gut Microbiome: An Integrative Omics Approach to Understand Child Growth and Development among the Selected Mother-Infant/Child Dyads of the Eastern Visayas Birth Cohort

DIAGNOSTICS

[NICER] Biomaterials for Diagnostics and Therapeutics Research and Development Center
Project 1. Development of a Colorimetric POCT Device for Rotavirus (Viral Gastroenteritis) Detection
Project 2. Fecal Lactoferrin, Myeloperoxidase, and Calprotectin as Differential Markers of Pediatric Acute Gastroenteritis
Project 3. Synthesis of Biocompatible Nanomaterial Conjugated Rabies Peptide Immunogen

RE-EMERGING AND EMERGING DISEASES

SAFeV: Survey of cross-reactive Anti-Flavivirus antibodies after Vaccination

Development of Cell Isolation Microfluidic Platform Using Light-Trigger Polymeric Matrix for Cancer Drug Screening

Development of Novel Antiviral Compounds against Arthropod-borne Viruses

Virology and Vaccine Institute of the Philippines (VIP)
3D-HEP-DD: Local adoption of a robust 3D-bioprinted HEPatic model for antiviral Drug Discovery research

Developing a COVID-19 Oral Vaccine for the Philippines Using the Human Probiotic Yeast, Saccharomyces boulardii
ResBac MRSA: Restoring antibiotic activity using Bacteriophages against biofilm-forming Methicillin-Resistant Staphylococcus aureus

SkIn PaTCH Project: Treatment of Skin wound Infection by multidrug-resistant pathogens using phage therapy cocktail preparations formulated from bacteriophages in hospital sewage in in vitro 3D-printed skin infection model"

Ongoing

PCHRD-Funded

ARCHER

Durability and Extent of Protection of SARS-CoV-2 Antibodies among Patients with COVID-19

CRISPR-based Diagnostics (CRISPR-Dx) for the Detection of SARS-CoV-2 and TB

Seroprevalence of Human Adenovirus 5 Neutralizing Antibodies in an Adult Population from Urban Philippines: Implications on Adenoviral Vector-Based SARS-CoV-2 Vaccines

Genetics, Immunological and Neurological Long-term Consequences in Prospective COVID-19 Cohort in Thailand, Japan, Philippines and USA (e-ASIA)

Formulation and Standardization of Procaine Hydrochloride – Methylprednisolone Sodium Succinate Powder for Injection

Coronavirus Disease 2019 (COVID-19) Immuno-Genomic Surveillance Program

Genomic and Clinical Characterization of an Emerging SARS-CoV-2 Variant P.3 in the Philippines

Establishing an Antibody Neutralization Assay for Characterization and Immunosurveillance of Emerging SARS-COV-2 Variants of Concern

SARS-Cov-2 Wild Type and Emerging Variants Culture, Isolation, Characterization and Immuno-Challenge Study
SiglaVent Design Optimization and Clinical Testing

Factors Associated with COVID-19 Infection Among Healthcare Workers

Developing and Implementing Testbeds for Low-cost Ventilation System Applicable in Tropical Regions for Risk Reduction of Infectious Aerosol/Virus Transmission

Determining Safety and Tolerability of a Standardized Formulation of Andrographis paniculata- A Phase 1 Study

Comparison of the Clinical Course of rt-PCR and Rapid Antigen Positive Mild COVID-19 Patients Confined in Community Isolation Facilities in Cavite Given Standard Treatment Plus Fixed-Dose Combination Capsules of Banaba and Ginger or Placebo: A Phase 2/3 Randomized, Double-blind, Placebo Controlled Trial

TUKLAS LUNAS®

Synthesis and Derivatization of Disease-specific Bioactive Hits and Lead Compounds (Phase II) - Project 5. Lead Optimization of Acrylated Cyclopentenone Derivatives with Anti-Inflammatory and Anti-Cancer Activities: Synthesis, Characterization, SAR and ADMETox Studies

Microwave-Assisted Synthesis, Characterization and Molecular Docking Studies of Quinoline-4-Carboxylic Acids and Hydrazide Isosteres with Antitubercular Activity

Anti-inflammatory and Anti-diabetic compounds from top-tier bioactive extracts

Structure Identification of Anti-inflammatory and Anti-Pain Agents from Priority Extracts (Phase 4)

Discovery and Development of Health Products [DDHP]: Formulation, Standardization, and Metabolic Profiling of Disease-Specific Top-Tier Plants for Pre-Clinical and Clinical Development
Project 1. Standardized dosage forms of biologically active extracts suitable for use in pre-clinical and clinical research: top tier herbs for diabetes and inflammation
Project 7. In vitro Cardiometabolic Activity and Toxicity Monitoring of Product Development Samples and Screening of New Herbals

Efficacy and Safety of Orally Administered Fixed-Dose Combination Capsule of RGA02 + JRA01 + ASB02 in the Treatment of Dengue Without Warning Signs Among Adult Filipinos in Cavite: A Randomized, Double-blind, Placebo Controlled Trial

Discovery and Development of Health Products [DDHP]: Formulation, Standardization, and Metabolic Profiling of Disease-Specific Top-Tier Plants for Pre-Clinical and Clinical Development
Project 2. Standardized Dosage Forms of Biologically Active Extracts Suitable for Use in Preclinical and Clinical Research: Top Tier Herbs for Diabetes, Inflammation and Cancer
Project 3. Standardized Dosage Forms of Biologically Active Extracts Suitable for Use in Pre-clinical and Clinical Research: Top Tier Herbs for Cancer
Project 4. Chemical standardization of top-tier plant extracts for diabetes, inflammation, and cancer using high performance thin layer chromatography
Myko-mining and Myko-pharming of Wild Edible and Poisonous Mushrooms in Luzon Island, Philippines for their Medicinal Properties (Phase III)
Project 1. Mykopharming of Wild Edible and Poisonous Mushrooms for Their Medicinal Properties

Compounds Active Against Cancer Lines (HCT116, MCF7, A549) from Priority Extracts – Phase II

FUNCTIONAL FOODS

Moringa oleifera-based Developed (MOD) Nutraceutical Product: Nutritional and Metabolome Profiling

The Effects of Dietary Fiber and Other Non-digestible Carbohydrates in a Pre-identified Low Glycemic Index Rice and Stabilized Brown Rice on Gut Microbiota

Assessment of Potential Health Benefits and Safety of Wines Produced from Brown, Green, and Red Seaweeds

NUTRITION AND FOOD SAFETY

Bacteriophage in Food Safety: Biosensing and Biocontrol of Food Pathogen

DIGITAL AND FRONTIER TECHNOLOGIES FOR HEALTH

Local Government Unit-mandated eHealth Networked Services for Universal Health Care (UHC LeHNS)

The LISA Robot: Logistic Indoor Service Assistant Telepresence Robot

POWer App: Mobile Health Application Development for Remote Screening & Early Detection of Children with Mobility Impairment

Biomedical Devices Engineering for Health
Development of a Cementless Hip Replacement System

Development of a Magnetic Distal Targeting Device for Intramedullary Nails

POWer: Mobile Biomedical Device Unit to Enhance Access to Prosthesis and Orthosis Devices
Benchtop and Clinical Validation of an Energized Reusable Laparoscopic Blunt Dissector

OMIC TECHNOLOGIES FOR HEALTH

The Philippine Virome Database Project

The Predict-XDR Project: Predicting Genetic Markers for Pre-XDR and XDR Tuberculosis (EASIA DOST)

Evaluation of the Safety and Feasibility of Intramuscular Transplantation of Umbilical cord- derived Mesenchymal Stem Cells for Diabetic Foot Ulceration

Filipino Genomes Research Program
Filipino Forensic Genomics (Phase I)
Filipino Genomes: History, Evolution, Origins and Applications
Filipino Genomes Region for to Help Resolve Child Sexual Abuse Cases

SPEEDIER - Surveillance integrating Phylogenetics and Epidemiology for Elimination of Disease: Evaluation of Rabies Control in the Philippines
(Newton Agham Cycle 2)

Using Tuberculosis host-pathogen genetic interactions to improve diagnostics in the Philippines
(Newton Agham Cycle 2)

Cellular immunity and resistance to schistosomiasis in the Philippines
(Newton Agham Cycle 2)

DIAGNOSTICS

Responding to the Philippine HIV Epidemic: An HIV Drug Resistance Surveillance Library and Development of Molecular Diagnostics for Drug-Resistance Detection Part 3: Development of Rapid Diagnostic for Detecting Lamivudine Resistance

Enteric Solutions: Development of a Vertical Flow Microarray (VFM) for the Detection of Enteric Viruses

Development of aptamer based colorimetric and electrochemical point of care type diagnostic test for pulmonary TB and latent TB infection

Affordable near-patient diagnostics to distinguish infectious diseases in the Philippines (AND2ID in Ph) (Newton Agham Cycle 2)"

RE-EMERGING AND EMERGING DISEASES
Development of IoT-Based OL Trap and Community Dengue Early Warning System (C-DEWS) for Cauayan City, Isabela

Moleculo-epidemiological study of dengue virus among livestock and domesticated animals as potential zoonotic reservoirs

Process Development of the Dengue Anti-NS1 Rapid Diagnostic Test
Autopsy Evaluations of Pathological and Immunological Events in Fatal Infections Caused by Arboviruses and Emerging Infections

The Philippine COPD Profile and Survival Study (CPASS): A Multicenter, Prospective Cohort, Observational Study

Prospective Urban and Rural Epidemiologic (PURE) Study

Regional Prospective Observational Research for Tuberculosis (RePORT) - Community Approach to Control and Halt Drug-Resistant TB (COACH DRTB)

DOST-FUNDED

ARCHER

Solidarity Vaccine Trial in the Philippines: Randomized Trial of Candidate Vaccines for COVID-19

Technical Battle Against COVId - Project 2. Rational Design and Structural Modifications of ACE2 Inhibitors from Terrestrial Plants

A Study Evaluating the Safety and Immunogenicity of Mixing Different COVID-19 Vaccines and Vaccine Platforms in Filipino Adults

Vaccine Immune Response and Outcome Monitoring with Epitope Sequences (VIROMES): Application to Philippine WHO SOLIDARITY COVID-19 Vaccine Trial

TUKLAS LUNAS®

Synthesis and Derivatization of Disease-specific Bioactive

Hits and Lead Compounds (Phase II)
Project 1. Lead Optimization, In Silico Prediction, Molecular Docking and Determination of ADMETox Properties of Small Molecules as Antidiabetic Drugs
Project 2. Molecular Docking and ADME-Tox–guided Synthesis of Azole-Based Anti-Infective Agents
Project 3. Synthesis of Deguelin, Rotenone, and Small Molecule Derivatives as Anticancer Agents
Project 4. Lead Optimization, Molecular Docking and Determination of ADME-Tox Properties of Benzimidazoles with Antihypertensive Activity
Project 6. Computer-Aided Drug Design of Natural Products-Based, and Synthetic Antidiabetic, Antifungal, and Anticancer Lead Compounds and Derivatives

Bridging Efficacy and Safety: IND-enabling Suite of ADMETox Assays
Project 1. Optimization of Physico-Chemical Drug Properties
Project 2. Cell-based ADMET assays
Project 3. HPLC and Mass Spectral Studies to Support Various ADMET assays
Project 4. Metabolite Profiling Using Imaging Mass Spectrometry
Project 5. Determination of Pharmacokinetic Properties

DDHP: Marine Component Phase 2
Project 1. Anti-Pain and Anti-Neurodegeneration Drug Candidates: Discovery and Development
Project 2. Anti-Infective and Anti-Cancer Drug Candidates from Marine Microorganisms and Sponges: Discovery and Development

Development of Anti-inflammatory Herbal Products from Iluko Indigenous Plants - Project 3. Formulation Dosage Forms from Standardized Non-toxic Bioactive Extracts from Indigenous Plants

Semi-Purification of Crude Plant Extract: An Essential Step for the Production of Pharmaceutical-Grade Ingredients

Formulation Quality Control and Stability Studies on Immediate-Release Tablets of Fixed-Dose Combinations of Cilostazol and Aspirin

Establishment of the Visayas NMR Laboratory: Enabling the countryside with the power of magnetic resonance for drug discovery and a forward-looking pandemic response

Discovery and Development of Health Products: Disease-Specific Bioactive Hits from Terrestrial Organisms - Confirmatory and Orthogonal Assays to Eliminate Artefactual Drug Bioactivities (Phase 3): Continuing Needs of the Tuklas Lunas Program

Securing the health of the Filipino for the Next Millennium: The National Institutes of Health Clinical Research (NIH-CRC) - Project 1: Science-Based Clinical Research Management Practices

DRR-CCA IN HEALTH

Developing a Geographic Information System to Address Post-Disaster Basic and Health Needs in Temporary Housing Facilities

Seasonal Distribution and Allergenicity of Airborne Pollen in Ilocos Norte, Philippines

FUNCTIONAL FOODS

Philippine Program for Diagnostic Biomarkers, Disease Modeling, and Nutriceutical Product Development (Phil-DIAMOND): Initial Focus on HIV-Related Neurocognitive and Metabolic Complications - Project 3. Development of a Safe Lactic Acid Bacteria (LAB)-based Biofunctional Health-promoting Product as an Adjunct Intervention for the Management of HIV-associated
Metabolic Complications"

NUTRITION AND FOOD SAFETY

Healthy Aging Program for Pinoy (HAPPY) Senior Citizens: Promoting Quality of Life Among Older Filipinos Through Food and Nutrition Solutions - Relationship of body composition to the functional capacity and quality of life of older Filipinos in selected provinces in the Philippines

MENTAL HEALTH

Novel Approaches to Treatment of Addiction and Depression Using Animal Models - Cessation of toluene (Rugby) addiction in adolescents: Using a rodent model to test novel pharmacological and behavioral treatments for overcoming withdrawal and craving

Depression, Anxiety, Self-Harm and Suicidal Behavior among Students in Higher Education Institutions: Sociocultural Determinants, Detection and Intervention towards Social Emotional Learning - A Collaborative Study - Mapping of Socio-Cultural Factors and Determinants Associated with Depression, Anxiety, Self-Harm and Suicidality among Students in Higher Education Institutions

Development and Effectiveness of Fully Automated Conversational Agents (Chatbots) for Enhancing Public Mental Health: From Pilot Study to Randomized Controlled Trial

BIOMEDICAL DEVICES ENGINEERING FOR HEALTH

Surgical Device Innovation Research and Development (R&D) Infrastructure, Capacity Building and Incubation Program: Proposal for Establishment of the University of the Philippines Manila (UPM) College of Medicine (UPCM) – Philippine General Hospital (PGH) Surgical Innovation and Biotechnology Laboratory (SIBOL)

iFIX: Design and Fabrication of External Fixator
Operating Room Programmable Electronically Targeted Active Lighting System (OR PETALS)

iBlood: A Compact Device for Measuring Intraoperative Blood Loss in Used Surgical Gauze and Laparotomy Packs

Establishment of the University of the Philippines Manila College of Medicine (UPCM) - (PGH) Surgical Innovation and BiOtechnology Laboratory (SIBOL)

Nanotexturing of Stainless Steel 316L by Electrochemical Etching for Biological Implants

OMIC TECHNOLOGIES FOR HEALTH

Philippine Program for Diagnostic Biomarkers, Disease Modeling and Nutraceutical Product Development (Phil-DIAMOND): Initial Focus on HIV-related Neurocognitive and Metabolic Complications

Biomarkers of Immune Dysfunction in HIV – associated Metabolic and Neurocognitive Complications
Development of HIV Disease Models and in vitro Investigation of HIV-related Neurocognitive and Metabolic Complications

Breast Cancer in the Philippines: Gene Expression Profiling of Breast Cancer Among Filipinos and Development of Breast Cancer Mammosphere Assay Toward Individualized Cancer Management

Next Generation Sequencing -based expression profiling of Breast Cancer among Filipinos and Prediction of Response to Neoadjuvant Therapy for Locoregionally-Advanced Breast Cancer in Filipinos

Development of Breast Cancer Mammosphere Assay for Chemotherapy Screening

Center for Applied Modeling, Data Analytics, and Bioinformatics for Decision-Support Systems in Health
Predictive Modeling and Viral Phylodynamic Analysis On the Spatial and Temporal Patterns of Disease Outbreaks with Considerations for Control and Logistics Applied in Mindanao Region
Risk Management and Enhanced Survival Analysis Integrated through Longitudinal Infectious Disease Data and Statistical Epidemiological Model Using Clinical Risk Factors

Vulnerability Assessment Tool: A Decision Support System for Pre-Emptive Preparedness on Emerging Infections Among Animal Reservoir in Urban Green Spaces

Integrated Wastewater-Based Epidemiology and Data Analytics for Community Level Pathogen Surveillance and Genetic Tracking: Proof-of-Concept

Early CANcer Detection in the LivEr of Filipinos with Chronic Hepatitis B Using AI-Driven Integration of Clinical and Genomic Biomarkers (CANDLE Study)
Project 2. AI-driven Integration of Genomic, Ultrasound, Serum Biomarkers, and Clinical data for Early Diagnosis of Liver Cancer
Project 1: Establishing a Clinical and Genomic Profile of Filipinos for Early Detection of Liver Cancer

A Proposal to Establish the Philippine Genome Center - Protein, Proteomics and Metabolomics Facility (PPMF) - Installation and Operation of the Philippine Genome Center -Protein Proteomics, and Metabolomics Facility (PPMF)
Enhanced Capability Building in R&D in Genomics

Establishment of Genomics Consortium and Core Facility in Visayas
Program Management Coordination
Clinical Proteomics for Cancer Initiative: A Proteomics-Based Discovery of Non-Small Cell Lung Cancer Biomarkers and Drug Targets in the Philippines Project 2: Sample Processing for Proteomic Analysis and

Functional Characterization and Early Clinical Confirmation of Biomarker Application

Intra-island Zoonotic Transmission of Schistosomiasis in Leyte, Philippines

DIAGNOSTICS

Development of Novel Detection Tools for the Integrated Surveillance and Monitoring of Helminthic Neglected Tropical Diseases (NTDs) of Mutual Public Health Importance in the Philippines and China

SinoPhil CHARRME: China-Philippines Cooperation for Harnessing and Accelerating Research and Resources on Microvesicles and Exosomes (Development of Exosome

Probe Chip as Potential Diagnostic for Autoimmune Diseases)

Aptamer-Based Multiplex Assay for the Early Detection of Leptospirosis

RE-EMERGING AND EMERGING DISEASES

Epidemiology, Evolutionary Dynamics and Phylogenetic Analysis of Rabies Virus in the Philippines

Persistence of immunological memory to malaria infection in areas of declining transmission

Virology and Vaccine Institute of the Philippines (VIP) Program
Project 1. Isolation and purification of Philippine Common Viruses with medical importance and pandemic potential for Antigen-Antibody Studies
Project 2. Combination Therapy: Lytic Bacteriophages and Plant Extracts against Multidrug-Resistant Bacteria
Project 3. Detection of food and water-borne bacterial pathogens using phage-based diagnostics
Project 4. De Novo Synthesis of Non-Infective Zika Pseudovirus As Reference for Diagnostics and Vaccines Development
Project 7. Antigenic Peptide VLPs as Potential Candidates for Covid-19 Vaccine Development
Project 8. Development of Antibody Test Kits for COVID-19 using Enzyme Immunoassay
Project 1: Establishment of Reference Susceptible Aedes Mosquito Population"
Project 2: Development of Bio - Mosquitocidal from Local Strain of Bacteria, Bacillus amyloliquefaciens and B. subtilis
Project 3: Biological Control of Mosquito Vectors, Aedes spp. Using Natural Organisms

Regional Prospective Observational Research for Tuberculosis (RePORT) - Long Term outcomes of Diagnosed Tuberculosis Cases in the Philippines

DOST-PCHRD-Funded

ARCHER

Immune Cell Phenotype Characterization of Moderate to Severe Coronavirus Disease 2019 (COVID-19) Patients at the Philippine General Hospital

Technical Battle Against COVID Project 1. Design and Synthesis of SARS-COV2, ACE2, SARS- COV2:ACE2 Destabilizing Compounds

TUKLAS LUNAS®

Discovery of Cardiometabolic Bioactives from Plants in Central Philippines (USC-TLDC Phase 2)
Project 3. Chemical Standardization of the Raw Material, Spray-dried Extracts and Dosage Forms from Selected Plants with Antihyperglycemic Activity
Project 5. Formulation Studies of Spray-dried Extracts from Plants with Antihyperglycemic Activity

OMIC TECHNOLOGIES FOR HEALTH

Clinical Proteomics for Cancer Initiative: A Proteomics-Based Discovery of Non-Small Cell Lung Cancer Biomarkers and Drug Targets in the Philippines
Project 1: Assembly and Archiving of Clinical Samples for Proteomic Analysis
Project 3: Proteomic analysis of aberrant protein expression in Non-Small Cell Lung Cancer (NSCLC)

DOST-DOH-Funded

ARCHER

Philippine Vaccine Effectiveness Project: A Post-COVID-19 Vaccination Surveillance Among Filipino Adult

2022 List of New, Ongoing, Completed Scholars

Local Scholarship Programs

MD-PhD in Molecular Medicine, University of the Philippines Manila

NEW

PCHRD

Advincula, Jirov A.
Cabrera, Mary Ann F.
Chua, Sean Philippe L.
Collantes, Claire Abigail A.
De Leon, Von Novi O.
Gumaru, Khevin Jade B.
Rodriguez, Harley M.
Samante, Fred Lawrence D.

ONGOING

PCHRD

Alcazar, Renne Margaret U.
Altavas, Patrick D.K.

Bacong, Junelle Rey C.
Badua, Christian Luke D.C.
Baldo, Karol Ann T.
Bal-Iyang, Kenworth Bryle A.
Barcena, Allan John R
Bolinas, Dominic Karl M.
Buan, Ara Karizza G.
Cabungcag, Nica
Cadeliña, Joshua Anthony A.
Cando, Leslie Faye T.
Capistrano, Nhel John L.
Catral, Charlene Divine M.
Ceriales, Jeremy A.
Chua, John Joseph R.
Cruz, Joana Marie C.
De Galicia, Bryan Paul D.
De Sagon, Scott Dean P.
Dela Cruz, Ma. Carmela P.
Escober, Nicole Jazzmine L.
Falcon, Robbi Miguel G.
Grecia, Mary Nicole I.
Guda, Justin V.
Josol, Vivien Joyce D.
Llagas, Julia Patricia B.
Malaluan, Michael Roy V.
Manalo, Rafael Vincent A.
Marco, Kitz Paul D.
Nakpil, Aurora S.
Opiso, Danna Mae S.
Paner, Joseph Romeo O.
Perias, Glenmarie Angelica S.
Pineda, Ryan Nikkole B.
Razal, Rozel B.
Remucal, Mark Joseph R.
Reyes, Michael Sigfrid S.
Reyes, Nico Alexander L.
Rocha, Anlene Jane B
Salvador, Paul Benedic U.
Sanico, Thea Coleen F.
Sianoya, Abraham C.
Teh, Treena Rica D. A.
Vista, Fatima Ericka S.

ASTHRDP

Aquino, Inah Marie C.
Asis, Joannes Luke B.
Cadacio, Jessa Louise C.
Carampel, Ajina C.
Cruz, Christian Alfredo K.
De Jesus, Federico Cristobal Ii C.
Dela Rosa, Jared Gabriel L.
Fernandez, Natasha Andrea
Gampoy, Eloina Faye S.
Girasol, Mark John G.
Grecia, Lordom Reno C.
Idolor, Maria Isabel C.
Lintao, Ryan Cristian V.
Lopez, Ben Anthony A.
Ona, Kevin Austin L.
Ornos, Eric David B.
Perez, Joy Vanessa D.
Rojo, Raniv D.
Robles, Joyce Ann H.
Pollo, Brian Andrich La Valle
Quebral, Elgin Paul B.
Relador, Ruth Joy L.
Reyes, Jeremiah V.
Severino, Mary Elise L.
Solidum, Jea Giezl N.
Velasco, Adrian Jonathan D.A.
Vidal, Manuel Jr. S.

COMPLETED

ASTHRDP

Sumalde, Angelo Augusto M.
Tumampo, Cherry Joy F.
Tan, Joanne Jennifer E.
Tantengco, Ourlad Alzeus G.
Uy, Mary Nadine Alessandra R.

MS in Molecular Medicine, St. Luke's Medical Center College of Medicine William H. Quasha Memorial

ONGOING

PCHRD

Antalan, David III G.
Apostol, K-Anne C.
Branzuela, Sandra Mei M.
Busog, Aren Maridin M.
Dabban, Romar G.
De Guzman, Raphael Joshua C.
Fariñas, Celeste Aleena V.
Fernandico, Adrian G.
Garcia, Joshua Roberto B.
Jacinto, Patrick Ian J.
Limbaga, Lorenzo Gabriel C.
Lao, Raphaella G.
Magan, Bernard Dominic C.
Matuloy, Liza S.
Realingo, Adeliza Mae L.
San Valentin, Erin Marie D.
Teruel, Patricia Lyanne A.
Velasquez, Dethalee Gabrielle R.

ASTHRDP

Contreras, Patrice Melody C.
Delicana, Reuel C.
Moria, Francis G.
Maynes, Tricia L.
Nana, Julie Anne M.
Pua, Marvin Adrian R.
Romano, Christopher T.
Solidum, Andrew James A.
Visda, Ann N.
Zimmer, Mary Christine G.

COMPLETED

PCHRD

Garcia, Clarissa Joy C.

PhD in Health Research, University of Santo Tomas

NEW

Ang, Maria Grace A.
Bacorro, Warren R.
Bueno, Mary Monica B.
Fidel, Maria Belinda Cristina C.

Foreign Graduate Scholarship Programs

PhD in Molecular Biomedicine, University of Trieste (UNITS) and Fondazione Italiana Fegato (FIF)

NEW

Garcia, Clarissa Joy C.
Mamerto, Therriz Mae P.

ONGOING

Cabral, Loraine Kay D.
Laraño, Allen Anthony P.
Llido, John Paul S.
Salvoza, Noel C.

MS in Tropical Medicine, Faculty of Tropical Medicine (FTM), Mahidol University (SEAMEO TROPMED Thailand)

NEW

Corpuz, Kristal Dale F.
Jacob, Beatriz Aira C.

Accelerated Science and Technology Human Resource Development Program (ASTHRDP)

PHD

ONGOING

Ang, Mary Jane C.
PhD Medical Microbiology, UPM

Baco, Fortunata L.
PhD Epidemiology, UPM

Bacudio, Ana Maria A.
PhD Medical Microbiology, UPM

Bonifacio, Julie Charmain O.
PhD Biology, UPD

Cruz, Rogelio S.
PhD Biological Science, UST

Cuarto, Ceazar Ryan U.
PhD Chemistry, UST

Dimaguiba, Justin Rachelle P.
PhD Biology, SLU

Encarnacion, Richard I.
PhD Molecular Biology and Biotechnology, UPD

Gregorio, Ernesto Ramos Jr.
PhD Health Promotion and Education, UPM

Galvez, Eleanor J.
PhD Health Promotion and Education, UPM

Lardizaval, Mechelle P.
PhD Biology, SLU

Malecosio, Serafin O. Jr
PhD Epidemiology, UPM

Maramag, Cherry C.
PhD Epidemiology, UPM

Miranda, Sheila De Vera
PhD Pharmacy, UST

Ongpoy, Romeo C. Jr.
PhD Pharmacy, UST

Ramirez, Ma. Anna Rita M.
PhD Nutrition, UPD

Sabinay, Stephen G.
PhD Molecular Biology and Biotechnology, UPLB

Safra, Sheila Arelli G.
PhD Health Promotion and Education, UPM

Sucol, Yusuf A.
PhD Environmental Science, UPLB

Varona, Gracia F.
PhD Parasitology, UPM

MS

ONGOING

Ang, Imelda C.
MS Clinical Epidemiology, UPM

Arvesu, Vermont E.
MS Pharmacology, UPM

Balce, Roderick D.
MS Microbiology, UST

Banzon, Joseph Joy G.
MS Medical Technology, UST

Batongmalaki, Roselle F.
MS Biology, USC

Bautista, Felix C. Jr
MS Environmental Science, UPLB
Barbas, Lord Ryan D.
MS PH Epidemiology, UERMMMC

Bernabe, Enrique-Rene G.
MS Pharmacy, UST

Botabara, Isagani B.
MS Biological Sciences, UST

Buhain, Rose Mabell C.
MS PH Epidemiology, UPM

Cabanilla, Carl Vincent D.
MS Chemistry, UPD

Calibjo, Hartzell M.
MS PH Epidemiology, UPM

Cauilan, Juan Jhonny M.
MS Pharmacy, UST

Chi, Jean Pauline C.
MS Asian Health Practices, UERMMMC

Cu, Richel Erin B.
MS PH Epidemiology, UERMMMC

Dagohoy, Marites S.
MS Pharmacy, UST

David, April Joy G.
MS PH Epidemiology, UERMMMC

David, Xenia P.
MS Pharmacology, UPM

De Jesus, Christopher C.
MS Pharmacology, UPM

De Leon, Rochee M.
MS PH Epidemiology, UERMMMC

Del Rosario, Glenn Sandee C.
MS PH Medical Microbiology, UPM

Dicdican, Isabel D.
MS Chemistry, MSU-IIT

Dimafelix, Paul Raymond S.
MS PH Epidemiology, UERMMMC

Galino, Jeffrey R.
MS Applied Physics, UST

Givero, Rosemarie L.
MS Pharmacy, UST

Hernandez, Maria Christa A.
MS Pharmacy, UST

Javier, Anna Katrina A.
MS PH Epidemiology, UPM

Ladion, Wendell Lou B.
MS Biology, MSU-IIT

Lamac, Maria Ruby L.
MS PH Epidemiology, UPM

Landicho, Shenjira A.
MS PH Epidemiology, UPM

Mabeza, Gaiselle F.
MS Chemistry, UPD

Macatangay, Sheila H.
MS PH Epidemiology, UERMMMC

Manansala, Teddy S.
MS Biochemistry, UPM

Manuel, Kaycee G.
MS PH Epidemiology, UERMMMC

Marzan, Emil G.
MS PH Epidemiology, UERMMMC

Mendoza, Lei Lanna C.
MS Medical Microbiology, UST

Morales, Lyndon DC.
MS Biostatistics, UPM

Napulan, Roderick M.
MS Biostatistics, UPM

Oco-Panganiban, Maria Michelle Joy P.
MS Family Medicine, UPM

Pagarigan, Geraldine
MS Tropical Medicine, UPM

Pataray, Celia Amour B.
MS Applied Physics, UST

Ravelo, Celia R.
MS Pharmacology, UPM

Resurreccion, Michael M.
MS Clinical Epidemiology, UPM

Reyes, Ruth Irene N.
MS Population Studies, UPD

Romero, Daryl C.
MS PH Epidemiology, UERMMMC

Rosario, Mary Rose D.
MS Clinical Epidemiology, UPM

Sayson, Alton John T.
MS PH Epidemiology, UERMMMC

Serdiña, Jan Michael B.
MS Applied Physics, UST

Solana, Marikka Thaenia V.
MS Clinical and Family Medicine, UPM

Soriano, Simonette C.
MS PH Epidemiology, UPM

Tayco, Crimson C.
MS Molecular Biology And Biotechnology, UPD

Teh, Davidson B.
MS PH Epidemiology, UERMMMC

Toledo, Franklin U.
MS Applied Physics, UST

Usman, Lourdes Consolacion R.
MS Pharmacy, UPM

Uy, Hilda T.
MS PH Epidemiology, UERMMMC

Valenzuela, Madonna M.
MS Biostatistics, UPM

William, Karmille-Allyson D.
MS PH Epidemiology, UERMMMC

Yap, Kristine Jeanne A.
MS Medical Microbiology, UPM

Balik Scientist Awardees

Dr. Myra O. Villareal (ST), Bicol University
Dr. Aloysius R. Domingo (ST), UP-NIH
Dr. Ike C. de la Peña (ST), Manila Adventist College
Dr. Thaddeus M. Carvajal (LT), DLSU Manila
Dr. Rose Constantino (ST), Cebu Normal University (CNU)
Dr. Gerard Dumancas (ST), University of San Agustin
Dr. Isaiah Paolo Lee (ST), National Institute of Molecular Biology and Biotechnology (NIMBB), University of the Philippines Diliman
Dr. June Bryan De la Pena (ST), Eastern Visayas Health Research and Development Consortium (EVHRDC)
Dr. Heidie Frisco-Cabanos (ST), University of the Philippines Manila, College of Medicine, Department of Biochemistry and Molecular Biology (UPM-CM-DBMB)
Dr. Jennifer Yang (ST), Department of Rehabilitation Medicine, UP College of Medicine

BSP coordinated and assisted activities in 2022

DOSTv Report/ DOST ExperTalk Online
Dr. Teodoro Fajardo – as Resource Speaker
Pre-recorded interview: January 24, 2022 (Monday), 02:00 PM PST/ 06:00 AM UK Time
Segment airing: January 26, 2022 (Wednesday)

Dr. Fidela L. Moreno – as Resource Speaker
Pre-recorded interview: February 1, 2022 (Tuesday), 10:00 AM PST
Segment airing: February 2, 2022 (Wednesday)

Dr. Ike de la Peña as featured on DOST Report Episode 131
Pre-recorded interview: Nov 2, 2022 01:30 PM Asia/Manila
Segment airing: Nov. 4, 2022
Link: https://fb.watch/hdPPQBK1Aj/

Dr. Isaiah Paolo Lee as featured on DOST Report Episode 132
Pre-recorded interview: Nov 9, 2022 01:30 PM
Segment airing: Nov. 11, 2022
Link: https://fb.watch/hdPIswN3zx/

TV/Radio Interview

Teleradyo interview with Katipunan Channel (https://www.facebook.com/partidokdp/): March 9, 2022
Dr. Salvador Caoili– as Resource Speaker
Topic: Host Institution experience and programs/projects with Balik Scientist
Link: https://www.facebook.com/partidokdp/videos/314337587348052/

Teleradyo interview with EAT Konek (DZEC 1062 KHZ Radyo Agila): March 20, 2022
Dr. Gerard Bryan Gonzales – as Resource Speaker
Topic: Balik Scientist Program and project related to nutrition

ABS-CBN Interview for TV Patrol feature on Alam Nyo Ba? Segment
Dr. Lourdes Nadala, Dr. Christina Lora Leyson and Dr. Myra Hosmillo –
as Resource Speakers
Pre-recorded interview: March 9 and 14, 2022
Topic: Women of VIP Balik Scientists in celebration of Women's Month Celebration

CNN Interview
Dr. Lourdes Nadala, and Dr. Myra Hosmillo – as Resource Speakers
Pre-recorded interview: March 14, 2022
Topic: Women of VIP Balik Scientists in celebration of Women's Month Celebration

Regional Activities

Science for Change Program Regional Visit and interview of Host Institution
Ms. Jean Ragub - as Resource Speaker
Pre-recorded interview: March 21, 2022

S4CP/BSP Monitoring Activities and Summit in Western Visayas (May 5-6, 2022)
The BSP PCHRD facilitated the interviews and video shoot for the regional visit. The materials gathered will be used in the Balik Scientist Achievement Award, and institutional video of the Program.
The following key persons from the University of San Agustin (USA) were interviewed:
Dr. Julius Adam Lopez - ongoing Medium-Term awardee (2021)
Fr. Frederick C. Comendador - USA President, Host Institution Focal person

List of accredited Research Ethics Committees (RECs) in 2022

LEVEL 1

NCR
Mary Johnston Hospital Research Ethics Committee
February 15, 2022

NCR
Ospital ng Makati Research Ethics Board
June 8, 2022

NCR
University of the Philippines - College of Home Economics Research Ethics Committee
July 13, 2022

NCR
University of Santo Tomas Graduate School - Research Ethics Committee
July 31, 2022

NCR
Rizal Medical Center Institutional Review Board
December 1, 2022

NCR
Tondo Medical Center Research Ethics Committee
December 28, 2022

REGION I
Ilocos Training and Regional Medical Center Research Ethics Committee (REC)
January 10, 2022

REGION I
Lorma College Research Ethics Committee
May 11, 2022

REGION VI
Central Philippine University
October 11, 2022

REGION VI
University of the Philippines Visayas Research Ethics Board
October 24, 2022

REGION VI
University of St. La Salle Research Ethics Committee
November 10, 2022

REGION VI
Western Visayas Health Research and Development Consortium Research Ethics Committee
November 14, 2022

REGION VI-A
University Of The Philippines Los Banos - Ethics Review Committee (ERC)
September, 22, 2022

REGION X
Northern Mindanao Medical Center Research Ethics Board
June 29, 2022

LEVEL 2

NCR
Trinity University of Asia - Institutional Ethics Review Committee (IERC)
January 5, 2022

NCR
University of Santo Tomas- College of Rehabilitation Sciences Ethics Review Committee
June 8, 2022

REGION 1
Region 1 Health Research and Development Consortium
March 28, 2022

REGION I
DOH Drug Treatment and Rehabilitation Center Dagupan
July 7, 2022

REGION II
Cagayan Valley Medical Center Research Ethics Review Committee
September 5, 2022

REGION III
Holy Angel University Institutional Review Board
June 10, 2022

REGION III
Dr. Paulino J. Garcia Memorial Research and Medical Center
July 28, 2022
REGION VI
Western Visayas Medical Center Ethics Review Committee

June 14, 2022
REGION VII
University of San Carlos Research Ethics Committee
September 5, 2022
REGION XI
Davao De Oro State College Research Ethics Review Committee
December 15, 2022

LEVEL 3

NCR
University of the Philippines Manila Research Ethics Board
March 7, 2022

NCR
Jose R. Reyes Memorial Medical Center Institutional Review Board
April 11, 2022

NCR
St. Cabrini Medical Center-Asian Eye Institute Ethics Review Committee
June 1, 2022

NCR
Far Eastern University - Dr. Nicanor Reyes Medical Foundation Institutional Ethics Review Committee
September 25, 2022

NCR
Lung Center of the Philippines - Institutional Ethics Review Board
October 3, 2022

NCR
University of the East Ramon Magsaysay Memorial Medical Center, Inc. Research Institute for Health Sciences Ethics Review Committee
October 5, 2022

NCR
Peregrine Eye and Laser Institute Institutional Review Board
October 24, 2022

REGION IV-A
Batangas Medical Center Research Ethics Review Committee
April 12, 2022

REGION VII
Cebu Doctors' University Hospital Research Ethics Committee
April 12, 2022

REGION VII
Vicente Sotto Memorial Medical Center Research Ethics Committee
July 1, 2022

REGION XI
Metro Davao Medical and Research Center, Inc. - Anda Riverview Medical Center, Inc. Cluster Research Ethics Review Committee
July 23, 2022

REGION XI
Department Of Health XI Cluster Ethics Review Committee - Research Ethics Committee (REC)
August 2, 2022

Regional Research Fund (RRF)

Completed

Quantification of Antibiotic Resistance Genes of Enterobacteriaceae from an Organic Farm and their Products in Benguet

In vitro and In Vivo Anti-hypercholesterolemic activity of Alocasia macrorrhiza (Araceae) and its Food Products

Ultrastructural Characterization of Snail-associated Digenic Parasites in Rice fields Surrounding Lake Mainit, Philippines: Implications for Transmission and Control of Schistosomiasis and Snail Transmitted Diseases: Phase I (Collection and Isolation of Trematodes)

Factors Associated with Acceptability of Mass Drug Administration for Morbidity Control of Schistosomiasis

Newly-approved

Epidemiology of Zoonotic Toxoplasma gondii Infection Among Household Cats in Region X
Exploring Antimicrobial Medicinal Plants used by Indigenous Natives in Two Mountain Ecosystems of Bukidnon, Philippines (EXAMINE Bukidnon)

The Lived Experiences of COVID-19 Survivors in Northern Mindanao

Development of a Cost Effective HPLC-FLD Analytical Method for the Quantification of Residual Fluoroquinolones in Chicken and Pork

LIMPIO: Lessening Infestation of Microbes and Parasites through Interventions in Open-field farms in Marilog District, Davao City

Water Quality Assessment and Evaluation of Human Health Risk in Selected Rivers of Lanao del Sur, Philippines

Physical Activity of the Elderly in the 4th District of Leyte amidst COVID-19 Pandemic

Predictors of Clinical Outcomes of COVID-19 Confirmed Adult Patients Hospitalized in Eastern Visayas Medical Center

Ongoing

Assessment of Organizational Cultures of Health Workforce in DOH- Retained Hospitals, Region 1
Hearing Screening Protocol Among Pupils With Special Healthcare Needs in Ilocos Norte

Serologic SARS-CoV-2 Antibody Level and Factors Affecting Its Production After COVID-19 Vaccination Among Employees of Mariano Marcos Memorial Hospital and Medical Center

Prevalence and Influencing Risk Factors of Health Conditions Among Tobacco Farmers in Ilocos Norte

Bioassay-Guided Isolation of Antibacterial Compounds from Mikania cordota Flower against Methicillin-Resistant Staphylococcus aureus (MRSA) Clinical Isolate

Comprehensive Evaluation of the Molluscicidal Activity of Euphorbia splendens Latex against Oncomelania quadrasi

Assessment of Infection Prevention and Control in Different Levels of Health Care Facility in Cagayan Valley (Region II)

Extraction, Characterization and Bioactivity Evaluation of the Essential Oils of Fruit Wastes

Development and Evaluation of Herbal Skincare Products infused with KaPaMa Plant Extracts for Infections

Detection of Staphylococcus aureus and its Methicillin-Resistant Strain: A Basis for a Proposed Effective Infection Prevention and Control Program of Selected Government Hospitals in Pampanga

The Anti-oxidant and Histo-protective Potentials of Balakat Tree (Ziziphus talanai (Blanco) Merr.) against Monosodium Glutamate-induced Neurological Aberrations in Male CD-1 Mice

Probiotic Potential of Lactic Acid Bacteria from Fermented Market-Scrapped Fruit and Vegetable Materials and its Antagonistic Activity against Selected Food and Water Borne Pathogens

Green Synthesis of Metal Oxide Cellulose Nanocrystals (MO-CNC) for Health-related Applications Phase 1

Screening for New Antimicrobials and Antioxidants from Penicillium and Talaromyces Species Isolated from Various Sources in Bicol Region, Philippines

Predictive Risk Mapping of Leptospirosis in Benguet using Environmental and Socioeconomic Data
Bacterial Antibiotic Resistance Pollution in Balili River

Associations of Physical Activity, Screen time and Sleep with Health and Developmental Outcomes among Filipino Preschool Children

Effectiveness of Ultrasound Guided Interfascial Hydrodissection with the use of Saline Anesthetic Solution for Myofascial Pain Syndrome of the Upper Trapezius: A Single Blind Randomized Control Trial

FightBac: Virtual Screening for Quorum Quenchers from Natural Product Database and their Synergistic Antibacterial Study

Maternal and Child Health Service Utilization in Selected Municipalities in Iloilo Province Before and During the COVID-19 epidemic, Western Visayas, Philippines: A Retrospective Cohort Study

Microplastic and Its Public Health Implications in Select Key Tourist Destinations in Cebu, Philippines

Nutritional Composition of Halymenia durvillei and its Potential Use as a Food Ingredient

Developing a Tool to Measure the Decision-Making Processes in Sex Practices among Men-who-have-sex-with-men anchored on Protection Motivation Theory (PMT)

Molecular Detection of Selected Tick-borne Pathogens in dogs, dog owners and veterinary clinicians/technicians in Cebu, Philippines

Clinico-Demographic Profile of Reported Child Injury Cases in Selected Rural Municipalities in N. Samar (2014 - 2016)

Chips Consumption as a Risk factor for UTI Among School Children in Tacloban City

Child Injury Among Patients Seen in All District Hospitals of Leyte

Prevalence and Nature of Antibiotic Residues in Pork and Poultry Meats Collected from Public Wet Markets and Private Meat Shops in Leyte

TAMBALAN: An Ethno-botanical Study Traditional Healing Practices and Herbal Medicines in Sitio Pena 2, Calbayog City

Synergistic Anti-Urolithiatic Activity Of Potassium Citrate and Blumea balsifera Extract On Calcium Oxalate Stones

Determination of chlortetracycline residue in chicken (Gallus gallus domesticus) meat products from public markets of Zamboanga City

Mathematical Models for Predictions and Preparedness (MMOPREPARE)

Perceived Effectiveness of Community-based Drug Rehabilitation Program in Valencia City, Bukidnon: Perspectives and Experiences of Drug Responders and other Stakeholders

Evaluation of the Antibacterial Properties of Cocoa (Theobroma cacao) Husk Extracts

Plant mediated synthesis of silver nanoparticles using mangosteen pericarp and their antimicrobial potential

Evaluation of Philippine Mango pectin as tablet binder for formulated Sambong tablet

Carotenoid Extraction and Characterization from Davao Carrots as a Potential Pharmaceutical Colorant

Bacteriocin from Fermented Durian Rinds to Prevent Food Safety Issues
Screening and Quantification of Antimicrobial Residues in Chicken Meat and Tissues in Davao City using Microbial Inhibition Assay and Enzyme-Linked Immunosorbent Assay (ELISA)

COURAGE: The Correlation between CYP3A5 Gene Polymorphisms and Tacrolimus Concentration-to-Dose Ratio among Kidney Transplant Recipients in Mindanao

Development of a Cost Effective HPLC-FLD Analytical Method for the Quantification of Residual Fluoroquinolones in Chicken and Pork

Health Risk Management Practices in Flood-Prone Public Elementary Schools in Caraga Region

Media Mileage

DOST, stakeholders seek FDA approval of VCO vs COVID
January 1
News, Philippine Star

"DOST, stakeholders seek FDA approval of VCO vs COVID-19
January 1
Philippine Star
https://www.philstar.com/headlines/2022/01/01/2151215/dost-stakeholders-seek-fda-approval-vco-vs-covid-19"

"DOST, stakeholders seek FDA approval of VCO vs COVID-19
January 1
MSN News
https://www.msn.com/en-ph/news/national/dost-stakeholders-seek-fda-approval-of-vco-vs-covid-19/ar-AASjGs5"

"DOST, stakeholders seek FDA approval of VCO vs Pandemic
January 1
Trending PH
http://trendingph.net/dost-stakeholders-seek-fda-approval-of-vco-vs-covid-19/"

"DOST, stakeholders seek FDA approval of VCO vs COVID-19
January 1
Atin Ito News
http://www.atinitonews.com/2021/12/dost-stakeholders-seek-fda-approval-of-vco-vs-covid-19/"

"DOST, nakikipag-ugnayan sa asosasyson ng mga coconut procesors sa bansa para maaprubahan ng FDA ang VCO para sa mild Covid-19 cases
January 1
Network Balita, DZRB"

"DOST makikipagtulungan sa mga coconut processors para maaprubahan ang VCO kontra COVID-19

January 1
DWIZ 882 AM
https://www.dwiz882am.com/index.php/dost-makikipagtulungan-sa-mga-coconut-processors-para-maaprubahan-ang-vco-kontra-covid-19/"

"Chairperson, Vaccine Expert Panel Dr. Nina Gloriani
January 3
Public Briefing Laging Handa
Philippines, PTV 4"

"Panayam kay Dr. Nina Gloriani, DOST Vaccine Development Expert Panel, Head
January 3
ACS Balita, DZRH TV"

"Panayam kay Dr. Nina Gloriani, DOST Vaccine Development Expert Panel, Head
January 3
ACS Balita, DZRH AM"

"Panayam kay Dr. Nina Gloriani , DOST Vaccine Expert Panel Chairperson
January 3
Round Up, DZBB"

"Panayam kay Dr. Nina Gloriani, DOST, Vaccine Expert Panel
January 3
Agenda ng Bayan, DZRB"

"DOST chief urges use of radiation monitoring facility
January 6
Manila News
https://www.manilanews.net//news/272114662/dost-chief-urges-use-of-radiation-monitoring-facility"

"DOST chief urges use of radiation monitoring facility
January 6
Manila News
https://www.manilanews.net/news/272114662/dost-chief-urges-use-of-radiation-monitoring-facility"

"5,901 participants of WHO Solidarity Trial already received first dose of COVID-19 vaccines -- DOST
January 7
24 Pilipinas
https://www.24pilipinas.com/lifestyle/5901-participants-of-who-solidarity-trial-already-received-first-dose-of-covid-19-vaccines-dost/299297-news"

"5,901 nakiisa sa WHO Solidarity Trial naturukan na ng 1st dose COVID vax — DOST
January 7
Remate Online
https://www.remate.ph/5901-nakiisa-sa-who-solidarity-trial-naturukan-na-ng-1st-dose-covid-vax-dost/"

"5,901 participants of WHO Solidarity Trial already received first dose of COVID-19 vaccines -- DOST
January 7
Manila Bulletin
https://mb.com.ph/2022/01/07/5901-participants-of-who-solidarity-trial-already-received-first-dose-of-covid-19-vaccines-dost/"

"332 participants of PH 'mix and match' trial get first dose of Sinovac vaccine
January 7
Manila Bulletin
https://mb.com.ph/2022/01/07/332-participants-of-ph-mix-and-match-trial-get-first-dose-of-sinovac-vaccine/"

"Clearances for PH Ivermectin clinical trial expected to be released within January --DOST exec
January 7
Manila Bulletin
https://mb.com.ph/2022/01/07/clearances-for-ph-ivermectin-clinical-trial-expected-to-be-released-within-january-dost-exec/"

"Clearances for PH ivermectin clinical trial expected to be released this month - DOST
January 8

National News, Manila Bulletin"

"PH real-world study on 'effectiveness' of COVID-19 vaccines to end by June 2022 -- DOST
January 8
Manila Bulletin
https://mb.com.ph/2022/01/08/ph-real-world-study-on-effectiveness-of-covid-19-vaccines-to-end-by-june-2022-dost/"

"92 plant species to be included in PH study on allergenic airborne pollen in Ilocos Norte
January 8
Manila Bulletin
https://mb.com.ph/2022/01/08/92-plant-species-to-be-included-in-ph-study-on-allergenic-airborne-pollen-in-ilocos-norte/"

"332 nakiisa sa Ph 'mix and match' trial; first dose na Sinovac vax naiturok na
January 8
Remate Online
https://www.remate.ph/332-nakiisa-sa-ph-mix-and-match-trial-first-dose-na-sinovac-vax-naiturok-na/"

"DOST mailalabas na ang resulta ng isinagawang clinical trial ng ivermectin
January 8
Unang Radyo sa Unang Balita, DZXL"

"Inaasahan mailalabas na ngayong buwan ng DOST ang mga clearance ng 8 buwan ivermectin clinical trial
January 8
RMN News Nationwide: The Sound of the Nation (7 AM), DZXL"

"332 indibidwal lumahok sa isinagawang mix & match trial ng Covid-19 vaccine sa bansa
January 8
Network Balita, DZRB"

"DOST-funded COVID vaccine mix-and-match study underway
January 10
News, Philippine Star"

"DOST-funded COVID-19 vaccine mix-and-match study underway
January 10
Philippine Star
https://www.philstar.com/headlines/2022/01/10/2152809/dost-funded-covid-19-vaccine-mix-and-match-study-underway"

"DOST-funded COVID-19 vaccine mix-and-match study underway
January 10
Philippine Star
https://www.philstar.com/headlines/2022/01/10/2152809/dost-funded-covid-19-vaccine-mix-and-match-study-underway"

"DOST-funded COVID-19 vaccine mix-and-match study underway
January 10
Philippine Star
https://www.philstar.com/headlines/2022/01/10/2152809/dost-funded-covid-19-vaccine-mix-and-match-study-underway"

"DOST-funded COVID-19 vaccine mix-and-match study underway
January 10
Philippine Star
https://www.philstar.com/headlines/2022/01/10/2152809/dost-funded-covid-19-vaccine-mix-and-match-study-underway"

"DOST-funded Pandemic vaccine mix-and-match study underway
January 10
Trending PH
http://trendingph.net/dost-funded-covid-19-vaccine-mix-and-match-study-underway/"

"DOST-funded COVID-19 vaccine mix-and-match study underway
January 10
Atin Ito News
http://www.atinitonews.com/2022/01/dost-funded-covid-19-vaccine-mix-and-match-study-underway/"

"Panayam kay Dr. Nina Gloriani, DOST Vaccine Development Expert Panel, Head
January 10
ACS Balita, DZRH TV"

"Vaccine expert; Variants posibleng madagdagan pa kung patuloy ang pagdami ng mga nahahawa
January 10
Headline Pilipinas, DZMM Teleradyo"

"DOST Vaccine Expert Panel - Chairperson Dr. Niña Gloriani
January 10
On The Spot, DZMM Teleradyo"

"DOST; Pag-aaral para sa mix and match ng mga bakuna vs Covid makukumpleto na
January 10
Teleradyo Balita, DZMM Teleradyo"

"Vaccine expert; Variants posibleng madagdagan pa kung patuloy ang pagdami ng mga nahahawa
January 10
Headline Pilipinas, DZMM"

"Panayam kay Dr. Nina Gloriani, DOST Vaccine Development Expert Panel, Head
January 10
ACS Balita, DZRH AM"

"DOST Vaccine Expert Panel - Chairperson Dr. Niña Gloriani
January 10
On The Spot, DZMM"

"DOST; Pag-aaral para sa mix and match ng mga bakuna vs Covid makukumpleto na
January 10
Teleradyo Balita, DZMM"

"DOST susuriin 92 uri ng halaman
January 11
Editorial, Abante Tonite"

"Executive Director, DOST-PCHRD Dr. Jaime Montoya- PH at 'critical risk' for COVID-19
January 11
The Big Story, One News"

"Adult Infectious Disease Expert SLH and Vaccine Expert Panel, DOST, Dr. Rontgene Solante
January 11
Rise and Shine Pilipinas, PTV 4"

"Vaccine Expert Panel Dr. Gloriani nagpaalala sa publiko kaugnay sa posibleng pagdami ng variant ng Covid-19 sa bansa
January 11
Balitang Todo Lakas, DWIZ"

"Vaccine Expert Panel Dr. Gloriani nagpaalala sa publiko kaugnay sa posibleng pagdami ng variant ng Covid-19 sa bansa
January 11
IZ Sa Alas Sais, DWIZ"

"Vaccine Expert Panel Dr. Gloriani nagpaalala sa publiko kaugnay sa posibleng pagdami ng variant ng Covid-19 sa bansa
January 11
IZ Balita Nationwide Umagang Edition, DWIZ"

"Asian Hospital to hold 5th Clinical Innovation Summit
January 12
Business Mirror
https://businessmirror.com.ph/2022/01/12/asian-hospital-to-hold-5th-clinical-innovation-summit/"

"Panayam kay Dr. Nina Gloriani , DOST-VEP Chairperson
January 12
Playback, DZMM Teleradyo"

"DOST Vaccine Expert Panel - Chairperson Dr. Nina Gloriani
January 12
Sakto, DZMM Teleradyo"

"Panayam kay Dr. Nina Gloriani, Head DOST Vaccine Development Expert Panel
January 12
Balitalakayan, Net 25"

"Panayam kay Dr. Nina Gloriani , DOST-VEP Chairperson
January 12
Playback, DZMM"

"DOST Vaccine Expert Panel - Chairperson Dr. Nina Gloriani
January 12
Sakto, DZMM"

"Panayam kay Dr. Nina Gloriani, Head of Vaccine Panel, DOST
January 14
Kada Umaga, Net 25"

"Panayam kay Dr. Jaime Montoya , DOST-PCHRD Director
January 14
Dobol Weng Sa Dobol B, DZBB"

"DOST-11 offers as much as P1-M for health-related proposals
January 14
Philippine News Agency
https://www.pna.gov.ph/articles/1165457"

"P1-M fund grant to boost health R&D in Davao
January 14
Billboard, Sun Star Davao"

"Clinical trial sa VCO sa mga pasyenteng may covid-19, tagumpay
January 15
Headline Balita, DZBB"

"Department of Science &Technology Dr. Jaime Montoya
January 15
Bigtime Balita, DZBB"

"Rekumendasyon para sa paggamit ng VCO para sa mga pasyenteng may covid-19, inihahanda na
January 15
Super Balita sa Tanghali Nationwide, DZBB"

"DOST: Right lagundi dosage can relieve COVID-19 symptoms
January 15
PTV News
https://ptvnews.ph/dost-right-lagundi-dosage-can-relieve-covid-19-symptoms/"

"Right lagundi dosage can relieve Covid-19 symptoms: DOST
January 15
Manila News
https://www.manilanews.net/news/272175962/right-lagundi-dosage-can-relieve-covid-19-symptoms-dost"

"Right lagundi dosage can relieve Covid-19 symptoms: DOST
January 15
Manila News
https://www.manilanews.net//news/272175962/right-lagundi-dosage-can-relieve-covid-19-symptoms-dost"

"Right lagundi dosage can relieve Covid-19 symptoms: DOST
January 15
Philippine News Agency
https://www.pna.gov.ph/articles/1165495"

"DOST eyes VCO nasal inhaler, mouth wash vs COVID-19
January 15
Manila Bulletin
https://mb.com.ph/2022/01/15/dost-eyes-vco-nasal-inhaler-mouth-wash-vs-covid-19/"

"5,901 participants of WHO solidarity trials get first dose of COVID-19 jabs
January 15
Manila Bulletin
https://mb.com.ph/2022/01/15/5901-participants-of-who-solidarity-trials-get-first-dose-of-covid-19-jabs/"

"5,901 participants of WHO solidarity trials get first dose of COVID-19 jabs
January 15
Manila Bulletin
https://mb.com.ph/2022/01/15/5901-participants-of-who-solidarity-trials-get-first-dose-of-covid-19-jabs/"

"Lagundi mabisa sa COVID 'pag tamang dosage - DOST
January 15
Abante
https://www.abante.com.ph/lagundi-mabisa-sa-covid-pag-tamang-dosage-dost/"

"Right lagundi dosage can relieve Covid-19 symptoms: DOST
January 15
Manila News
http://manilanews.ph/right-lagundi-dosage-can-relieve-covid-19-symptoms-dost/"

"Correct lagundi dosage seen to relieve COVID-19 symptoms -- DOST
January 16
Manila Bulletin
https://mb.com.ph/2022/01/16/correct-lagundi-dosage-seen-to-relieve-covid-19-symptoms-dost/"

"Lagundi mabisa sa coronavirus
January 16
News, Abante"

"'Lagundi can relieve COVID symptoms"
January 16
Front Page, Tempo"

"DoST offers P1M for health-related proposals
January 16
Opinion News, Peoples Journal"

"Right lagundi dosage can relieve Covid-19 symptoms: DOST
January 16
Philippine Times
https://www.philippinetimes.com/news/272175962/right-lagundi-dosage-can-relieve-covid-19-symptoms-dost"

"Lagundi can help vs Covid
January 16
Page Three, Daily Tribune"

"VCO nasal inhaler, mouth wash vs COVID pinag-aaralan ng DOST
January 16
Remate Online
https://www.remate.ph/vco-nasal-inhaler-mouth-wash-vs-covid-pinag-aaralan-ng-dost/"

"Dengvaxia vilifier Acosta cries 'discrimination' against anti-vaxxers amid COVID-19 surge
January 16
Abogado
https://abogado.com.ph/dengvaxia-vilifier-acosta-cries-discrimination-against-anti-vaxxers-amid-covid-19-surge/"

"VCO vs COVID-19, isinusulong ng DOST-PCHRD
January 16
DWIZ 882 AM
https://www.dwiz882am.com/index.php/vco-vs-covid-19-isinusulong-ng-dost-pchrd/"

"DOST eyes VCO nasal inhaler, mouth wash vs COVID-19
January 16
24 Pilipinas
https://www.24pilipinas.com/lifestyle/dost-eyes-vco-nasal-inhaler-mouth-wash-vs-covid-19/301618-news"

"Potensyal na paggamit ng VCM
January 16
IZ Balita Nationwide Tanghali Edition, DWIZ"

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Perez, Phoebe Nicole
Rosana, Albert

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Agsaoay, Donna Mae J.
Alvarez, Ryan
Baclas, Ric Fuentes
Bodo Jr, Bonifacio Benedict
Buclatin, Jessamyn M.
Cabael, Ronafe
Carullo, Aljon T.
Coleto, Janneth M.
Dayao, John Jefferson G.
Dela Cruz, Berwyn John C.
Esquejo, Benedict Leondro V.
Faller, Kyla Maria
Flores, Faye A.
Francisco, Arsenia D.
Go, Lorainne M.
Gonzales, Alec Benjamin M.
Hernandez, Diego O.
Inocencio, Kristine N.
Laureano, Eric B.
Lupango, Evelyn A.
Manuel, Crisel Joie T.
Marabe, John Jave D.
Martinez, Gerlie P.
Mercado, James Lloyd T.
Milante, Earvin James P.
Milante, Irish G.
Ocon, Sylvia N.
Ogsimer, Franco
Pambid, Kateleen A.
Pangan, Cirio Jr. D.
Paulican, Donna Dominique F.
Pedrezuela, Ronaldo P.
Quiminales, Desiree S.
Ruga, Erving B.
Sacro, Glaiza D.
Sacro, Louie Vic N.
Saguin, Arnold S.
Taborda, Wilfredo T.
Tolentino, Jonavie
Zacarias, Orlando
Zepeda, Chezca Stephanie V.

Institution Development Division (IDD)
De Leon, Paula Jane A. (OIC)
Alegrado, Mercy Mae E.
Arenas, Eixylaine O.
Baculina, Renalyn H.
Balbuena, Maria Belen A.
Cambonga, John Marc R.
Caro, Agape Joy
Castelo, Estelle Kathleen B.

Diez, Phoebe R.
Escal, Charlene A.
Gonzales, Audrey John P.
Gozun, Ian Hannah C.
Jimenez, Maria Rexie
Juanite, Ma. Katrina G.
Labonite, Laila Molina
Lanuza, Maria Angelica D.
Maza, Daphne Joyce
Miranda, Pamela Joyce L.
Panganiban, Fatima E.
Pedraza, Alysya Marie Dizon
Perez, Rubee Ellaine C.
Ravago, Analyn M.
Refuerzo, Reichel Ann P.
Roja, Lucila Espiritu
Suerte, Jessica Marie R.
Taculog, Sydney P.

Research and Development Management Division (RDMD)
De Leon, Paul Ernest N. (Chief)
Agapito, Renzo Val G.
Almonte, Andrea Mae L.
Ambrocio, Diovelle Anne Eve E.
Austria, Jemuel Joshua Z.
Bartolome, Jay Vee C.
Buan, Raizsa Sharmi E.
Bulao, Melissa C.
Bungalon, Kamzky Jonas P.
Cababa, Georgina Rae C.
Campos, Mary Charlene R.
Celebrado, Jules Carl
Cepria, Deborah Joy J.
Dalugdog, Arnestie F.
David, Maria Ariane Agatha Victoria B.
De Jesus, Ana Jessa A.
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Decena, Patricia Mae T.
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Landingin, Angela Joy D.
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Lim, Geraldine Bernadete C.S.
Lo, Nica D.
Lobete, Ma. Anne L
Macasinag, Angeline S.
Mendoza, Ana Veronica C.
Mendoza, Rachelle C.
Noble, Christine Rae Simone D.
Obdosantos, Roi Miguel M.
Olaguer, Louise Sky T.
Pacho, Mary Ann I.
Parilla, Patricia Mae
Quirante, Jason
Salaysay, Chiendy Mae F.
Sanchez, Claridel H.
Sarmiento, Lance Ehrold D.
Serrano, Yasmin Janina A.
Solis, Abby Gail
Talag, Maica Ann A.
Tumlos, Pearl Kathleen C.
Valdez, Joseph Emmanuel

Research Information, Communication, and Utilization Division (RICUD)
Garcia, Ullyann C. (Chief)
America, Joana A.
Arcaina, Jaobly B. *
Bacarra, Alyana Kaye M.
Balangat, Julie Anne G.
Banal, Mary Joy
Bigay, Giselle Gale P.
Cenon, Grace Ann A.
Daulat, Grace Ruth
Dimailig, Catherine Joy C.
Flores, Donavie D.
Gabriel, Ross Gerald T.
Gonzalez, Christine Jane M.
Hasta, Marc Enrico O.
Hernandez, Joanna Mae D.
Intia, Maria Violeta G.
Itulid, Ana Ciaren H.
Labutong, Karen Joy A.
Lavapie, Neil Jerome P.
Limbo, John Paul G.
Lolong, Ronald Ryan D.
Macan, Jwynne Gwyneth P.
Marco, Mylene B.
Mendez, Nowell
Molina, Ronel D.
Oriane, Aileen A.
Pantaleon, Cris E.
Pariño, Renzell Ann M.
Pimentel, Geraldine Bea P.
Ramirez, Shaira Ingrid G.
Regio, Angelique R.
Rico, Elimel Rome A.
Sumague, Marie Antoniette V.
Tiamson, John Henry B.
Uy, Alyne Nicole Jake M.
Vios, Christian Anthony B.

QUALITY POLICY

We are committed to provide research-based solutions and innovations in health, based on the balance scorecard set by the Council, within the highest standards of professionalism, within our core competency and available resources, in accordance to customer requirements, and in adherence to ethical standards, applicable regulatory and statutory requirements.

We commit to continually improve the effectiveness of our QMS to enhance customer satisfaction.

PCHRD
ANNUAL REPORT

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